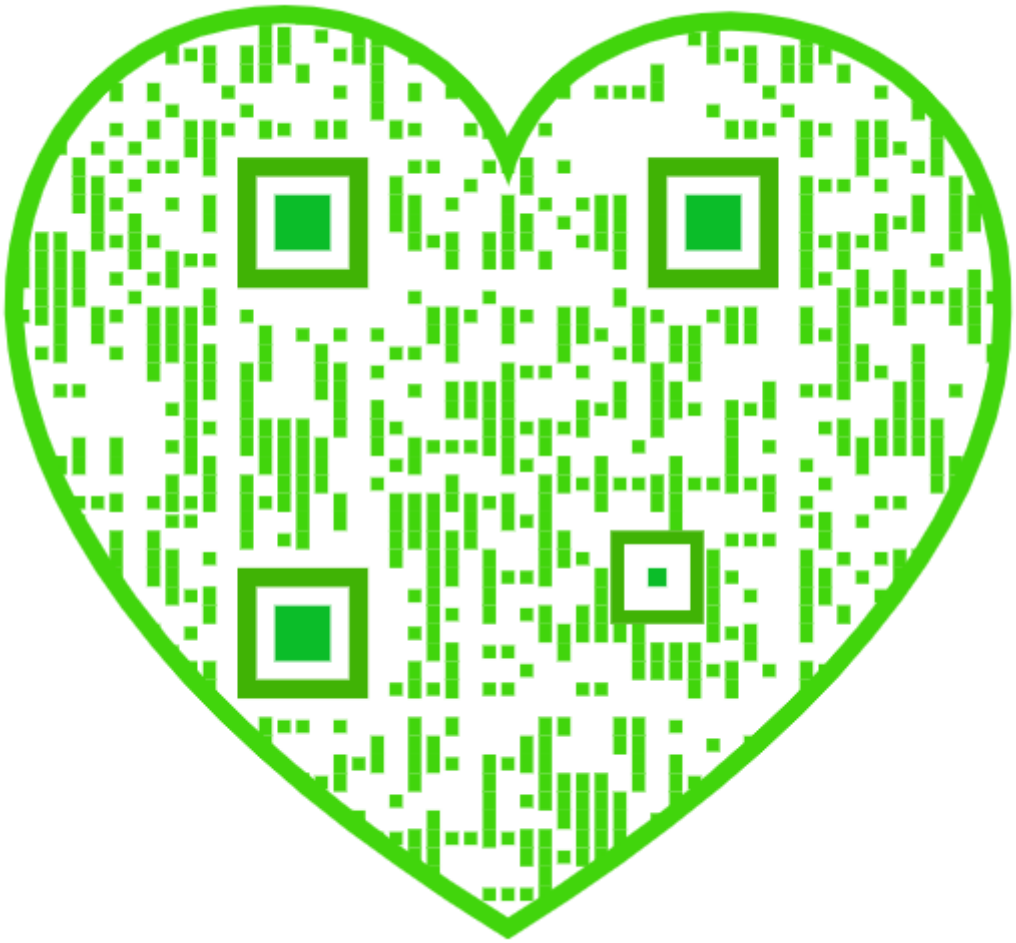

ARITHMETIC BY GRADES

FOR INDUCTIVE TEACHING, DRILLING AND TESTING

BOOK NUMBER THREE

Integers to 1,000,000. Fractional parts of Numbers, United States Money, Weights and Measures, Measurements

DEPARTMENT OF EDUCATION
LELAND STANFORD JUNIOR UNIVERSITY

PREPARED UNDER THE DIRECTION OF
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NOTE TO TEACHERS.

THE attention of teachers is called to the following features of this series of books — features which should be kept in mind as the various subjects are presented.

1. The separation of teachers' and pupils' books, whereby pupils may be taught properly and may not be given too great assistance. Suggestions as to methods of teaching and drilling, as well as the illustrative processes, explanations, rules, and definitions which belong to the teacher to develop analytically are put into the Teachers' Manual, while in the pupils' books are presented only such exercises as are needed for practice.

2. The careful gradation of problems, by which pupils acquire inductively a knowledge of arithmetical relations and principles, and skill in arithmetical processes. This is in recognition of the well-known pedagogical principles of proceeding from the known to the unknown, and from the simple to the complex. It is advised that this plan be kept constantly in mind by the teacher, and that whenever a process is not understood or is not readily performed, the pupils should be taken back to processes which are well known and which can be performed readily, and then should be led forward by easy steps until the desired end is reached.

3. Frequent reviews, and such an arrangement of exercises as will enable pupils to have needed practice in the applications of each principle, first by itself, and afterwards in connection with other principles which have been learned.

4. The large amount of oral work, or work which may be done without the aid of figures. Three objects of Mental Arithmetic are sought in these exercises: (*a*) Illustration of principles and a preparation for written work, (*b*) Development of the logical powers, (*c*) Cultivation of ability to work with large numbers by short processes.

5. The great number and variety of problems. The aim has been to give the *largest number* of problems that will be needed for teaching and for drilling in all grades. For this reason, and because the forms of expression are varied, being taken from many sources, there will be no necessity of giving supplementary drill lessons on the blackboard. Blackboard lessons are objectionable not only on account of a waste of the teachers' time and strength, but also on account of the injury done to pupils' eyes in much reading and copying from the blackboard.

6. Practicalness of work in respect to the character of the problems, and the solution of them. Care has been taken to give problems which are most likely to be met in every-day life, and to give them in a practical form. Many of the miscellaneous review problems were made by mechanics, clerks, accountants, etc., with a view of presenting conditions most likely to occur.

7. The introduction of statistics and facts of physics, astronomy, history, geography, etc., thus enabling pupils to gain incidentally much useful information.

8. The use of drill tables and other devices to save the time of teachers.

The first section of this book is given to a review of Book No. 2. If these exercises are found too difficult for pupils, it would be well to review such parts of Book No. 2 as are most needed to give a good foundation for subsequent work.

In developing ideas of numbers to thousands and millions, and of the combinations and relations of those numbers, objects are necessary. The most convenient objects for this purpose are the ordinary splints or wooden tooth-picks. These can be put into bundles of the required size with rubber bands. It is advised that a large number of these splints be supplied to pupils for individual use in the preparation and recitation of lessons.

Drawings also in illustration or explanation of required processes are advised. This exercise will be found especially profitable as well as agreeable for busy work.

For other suggestions and directions in using this book, and for answers to problems, teachers are referred to the Manual for teachers, which is designed to accompany all books of the series.

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SECTION I.

NUMBERS FROM 1 TO 100. (REVIEW.)

a. 3; 43; 5; 65; 2; 72; 4; 84.
b. 6; 36; 8; 58; 7; 47; 9; 69.
c. 37; 43; 19; 62; 54; 85; 32; 78.
d. 45; 66; 35; 51; 83; 64; 28; 49.

1. Add 4 to each of the above numbers.

2. Add 6. **3.** Add 5. **4.** Add 3.

5. Add 7. **6.** Add 9. **7.** Add 8.

8. Add by columns and lines:

$3+6+7+8+9+7+5=$
$5+9+6+4+3+8+7=$
$9+5+3+9+8+5+6=$
$4+7+5+3+6+8+9=$
$6+2+8+7+5+9+4=$
$5+8+6+8+9+3+7=$
$7+3+9+5+7+6+8=$

9. Add by columns and lines:

$3+5+7+9+8+7+6=$
$9+7+6+6+5+8+3=$
$8+3+7+4+6+9+5=$
$6+5+4+8+9+3+7=$
$7+4+3+9+5+8+6=$
$5+8+9+3+7+6+8=$
$4+7+8+6+5+3+9=$

10. $19+7+8+9+5+7+6+4+8+6+5+7=$
11. $16+5+4+8+9+7+3+6+5+8+4+9=$
12. $13+8+4+9+8+6+5+8+3+7+6+8=$
13. $17+7+3+6+9+6+8+5+7+7+9+3=$
14. $18+4+6+5+8+7+5+9+5+6+5+7=$

1. $100-2-4-3-5-2-3-1-4-5-3-2-4=?$
2. $100-3-5-4-6-2-4-5-2-6-4-3-5=?$
3. $100-7-4-6-5-6-5-7-4-5-6-5-7=?$
4. $100-4-7-5-8-7-3-6-5-7-2-6-4=?$
5. $100-6-7-8-3-4-8-7-5-8-7-6-3=?$
6. $100-4-8-3-9-5-8-4-7-6-9-3-7=?$
7. $100-9-7-8-6-8-9-7-8-6-9-3-8=?$
8. $21+6-9+8-7+8+9-6+7-8+9-5+6=?$
9. $14+9-8+7+8+9-6-7+5+8-9-8+7=?$
10. $26-7+9-8-7+9+7-6-8-7+6+8+9=?$

	11.	**12.**	**13.**	**14.**	**15.**
a.	$20+20$	$20+16$	$50-40$	$26-10$	$50+26$
b.	$30+10$	$40+18$	$60-30$	$42-20$	$61-20$
c.	$10+40$	$30+26$	$80-60$	$38-20$	$43-20$
d.	$50+30$	$50+27$	$100-30$	$54-30$	$40+35$
e.	$40+60$	$60+34$	$70-40$	$66-40$	$82-40$
f.	$20+30$	$30+46$	$90-70$	$49-20$	$48+20$
g.	$70+20$	$10+58$	$80-20$	$89-50$	$68-30$
h.	$30+40$	$40+55$	$70-50$	$74-30$	$20+34$
i.	$40+50$	$30+49$	$80-50$	$98-40$	$54+20$
j.	$60+30$	$20+74$	$100-70$	$91-50$	$54-20$

	16.	**17.**	**18.**	**19.**	**20.**
a.	$40+36$	$100-21$	$50+24$	$36+40$	$50+37$
b.	$30+25$	$90-72$	$80-27$	$27+50$	$60-34$
c.	$72+20$	$80-36$	$70-33$	$89-40$	$80-25$
d.	$60+32$	$90-45$	$20+38$	$60-17$	$45+30$
e.	$20+78$	$100-62$	$90-16$	$28+60$	$90-18$
f.	$30+49$	$70-39$	$40+39$	$100-27$	$70+29$

1. From 100 take each of the following numbers:

26, 34, 18, 43, 72, 86, 37, 19, 29, 54, 65, 67, 62, 81, 17, 21, 39, 71, 85, 15, 44, 16, 59, 48, 23, 38, 74, 82, 47, 53, 77, 66, 33, 55, 14, 27, 86, 35, 38, 76, 29, 17, 52, 24, 49, 16, 31, 22, 18, 69, 17, 64, 32.

	2.	**3.**	**4.**	**5.**	**6.**
a.	21 + 21	100 − 23	42 + 21	35 − 25	25 − 14
b.	32 + 32	80 − 36	35 + 24	83 − 53	36 − 13
c.	41 + 23	70 − 44	27 + 32	74 − 24	48 − 11
d.	43 + 24	50 − 37	21 + 38	89 − 19	39 − 18
e.	52 + 18	90 − 56	33 + 46	58 − 38	56 − 22
f.	64 + 36	80 − 37	29 + 14	67 − 27	58 − 33
g.	73 + 27	60 − 18	36 + 18	85 − 55	65 − 21
h.	84 + 36	90 − 53	59 + 22	72 − 32	88 − 35
i.	27 + 93	100 − 76	38 + 24	98 − 68	96 − 23
j.	38 + 52	90 − 19	46 + 35	75 − 45	74 − 31

	7.	**8.**	**9.**	**10.**	**11.**
a.	17 + 14	24 + 18	36 − 20	21 − 14	22 + 18
b.	18 + 13	26 + 17	36 − 28	23 − 18	40 − 17
c.	16 + 17	25 + 14	42 − 20	34 − 15	36 − 20
d.	19 + 15	27 + 18	42 − 29	37 − 19	36 − 24
e.	14 + 18	17 + 24	51 − 30	32 − 18	33 + 14
f.	17 + 18	16 + 28	51 − 36	46 − 17	37 + 18
g.	13 + 19	29 + 15	73 − 40	53 − 15	39 + 17
h.	18 + 15	25 + 19	73 − 47	64 − 18	56 − 14
i.	19 + 17	17 + 28	84 − 50	75 − 16	56 − 17
j.	16 + 19	23 + 19	84 − 58	84 − 17	44 + 28

	a.	*b.*	*c.*	*d.*	*e.*	*f.*	*g.*	*h.*	*i.*	*k.*
1.	1	12	26	34	47	53	67	76	84	96
2.	2	19	22	31	43	52	70	73	87	93
3.	5	16	28	39	41	55	63	77	83	94
4.	8	17	21	33	44	59	62	75	86	97
5.	3	15	27	36	49	51	68	72	90	92
6.	7	20	24	32	46	58	61	80	82	99
7.	4	13	29	38	42	54	66	71	88	95
8.	9	18	23	40	45	57	64	79	85	91
9.	6	11	30	35	50	56	65	74	89	98
10.	10	14	25	37	48	60	69	78	81	100

1. $c+d$? $d+b$? $e+d$? $f+c$? $g+b$?

2. $k-h$? $i-f$? $h-d$? $g-c$? $f-b$?

3. Multiply a by 3; by 4; by 5; by 6.

4. Divide the numbers from b to h by 8.

5. Divide the numbers from b to f by 6.

6. Divide the numbers from b to k by 9.

7. Multiply each of the following numbers by 3: 5, 7, 6, 8, 3, 9, 4, 1, 2, 10.

8. Multiply each number in Exercise 7 by 4; by 5; by 6; by 7; by 8; by 9; by 10.

9. Make multiplication table to 100 in a square.

10. How many 3's in 8, 11, 21, 26, 13, 20, 31, 27, 35, 33, 29, 27, 34, 28, 19?

11. How many times 4 is 31, 27, 43, 26, 19, 17, 34, 39, 45, 47, 50, 37, 29, 43, 49, 23?

12. How many times 5 is each number in Exercise 10?

13. How many times 6 is each number in Exercise 10?

14. How many times 7 is each number from *b to g*?

	a.	*b.*	*c.*	*d.*	*e.*	*f.*	*g.*	*h.*	*i.*
1.	11	36	74	100	5	6	9	12	7
2.	27	32	81	100	8	7	11	8	11
3.	18	53	90	100	7	1	6	11	8
4.	22	41	76	100	3	11	9	8	12
5.	13	47	83	100	9	2	10	8	3
6.	12	38	97	100	4	10	7	12	6
7.	16	57	80	100	2	5	8	9	5
8.	28	33	89	100	6	6	4	11	6
9.	15	52	95	100	12	3	8	10	4
10.	30	45	78	100	7	8	11	8	7

1. Add $e\,f\,g$.
2. Add $e\,g\,h$.
3. Add $e\,h\,i$.
4. Add $a\,i$.
5. Add $b\,f$.
6. Add $c\,f$.
7. From b take a.
8. From c take b.
9. From d take c.
10. Multiply e by f.
11. Multiply f by g.
12. Multiply g by h.
13. Multiply h by i.
14. Divide a by i.
15. Divide c by h.
16. Divide b by g.
17. Divide d by f.
18. Divide d by g.
19. Write in Roman notation all numbers to 100.

	20.	**21.**	**22.**	**23.**	**24.**
a.	$26+25$	$35-27$	$36+29$	$64+28$	$81+19$
b.	$38-17$	$42-23$	$45-37$	$25+86$	$94-26$
c.	$34+36$	$37+26$	$72-23$	$57+42$	$93-25$
d.	$42+27$	$38+28$	$83-17$	$48-29$	$84-46$
e.	$63-21$	$58-26$	$29+43$	$63-35$	$73-19$
f.	$63-28$	$64-25$	$35+47$	$75-46$	$53+34$
g.	$59+27$	$80-36$	$47+36$	$83-46$	$87-64$
h.	$18+73$	$47+35$	$55+29$	$47-23$	$75-69$
i.	$84-16$	$59-33$	$83-35$	$29+67$	$83-47$
j.	$93-18$	$53+39$	$67-28$	$36+48$	$74-48$

Fill the following blanks:

1. 1 gal. = — qt.
2. 1 qt. = — pt.
3. 1 pt. = — gi.
4. 1 yd. = — ft.
5. 1 ft. = — in.
6. 1 bu. = — pk.
7. 1 pk. = — qt.
8. 1 qt. = — pt.
9. 1 doz. = — things.
10. 1 lb. = — oz.

11. 3 qt. + 1 pt. = — pt.
12. 4 gal. + 2 qt. = — qt.
13. 2 pk. + 3 qt. = — qt.
14. 3 bu. + 5 pk. = — pk.
15. 6 yd. + 2 ft. = — ft.
16. 4 ft. + 7 in. = — in.
17. 4 doz. + 6 things = — things.
18. 3 lb. + 8 oz. = — oz.

19. Write in figures:

five-eighths	two-elevenths	four-sevenths
seven-fifths	four-sevenths	five-eighths
three-ninths	six-fifths	four-ninths
seven-sevenths	nine-twelfths	seven-tenths
nine-tenths	six-sevenths	five-sevenths
five-ninths	two-thirds	three-elevenths

20. Harry has nine marbles. James has two-thirds as many. How many has James?

o o o = $\frac{1}{3}$
o o o = $\frac{1}{3}$
o o o = $\frac{1}{3}$
} $\frac{2}{3}$ of 9 = ?

21. I had 12 oranges, and sold three-quarters of them. How many had I left?

o o o = $\frac{1}{4}$
o o o = $\frac{1}{4}$
o o o = $\frac{1}{4}$
} Sold.
o o o = $\frac{1}{4}$ of 12 = ?

1. Illustrate with objects what is meant by

$\frac{3}{7}$ of 28	$\frac{5}{6}$ of 36	$\frac{6}{6}$ of 12	$\frac{4}{5}$ of 20
$\frac{2}{8}$ of 16	$\frac{3}{8}$ of 32	$\frac{2}{3}$ of 18	$\frac{3}{7}$ of 21
$\frac{3}{4}$ of 24	$\frac{5}{9}$ of 27	$\frac{3}{3}$ of 36	$\frac{4}{5}$ of 30

How many are

2.	**3.**	**4.**	**5.**
$\frac{7}{10}$ of 90	$\frac{3}{8}$ of 72	$\frac{4}{9}$ of 54	$\frac{6}{6}$ of 42
$\frac{6}{7}$ of 28	$\frac{4}{9}$ of 36	$\frac{5}{6}$ of 42	$\frac{4}{9}$ of 27
$\frac{8}{9}$ of 81	$\frac{7}{8}$ of 48	$\frac{3}{5}$ of 45	$\frac{7}{8}$ of 32
$\frac{3}{7}$ of 49	$\frac{5}{6}$ of 72	$\frac{4}{7}$ of 63	$\frac{6}{7}$ of 35
$\frac{4}{9}$ of 72	$\frac{5}{9}$ of 63	$\frac{5}{8}$ of 56	$\frac{3}{8}$ of 48
$\frac{5}{12}$ of 84	$\frac{5}{8}$ of 64	$\frac{3}{4}$ of 32	$\frac{4}{5}$ of 20

6. Bought $2\frac{1}{2}$ lb. of meat at 12¢ a pound, and 3 doz. eggs at 15¢ a dozen. Gave a one-dollar bill. What change should I receive?

7. What must I pay for 20 eggs at 12¢ a dozen?

8. If 2 quarts of milk weigh $4\frac{1}{2}$ lb., what do 2 gallons weigh?

9. How many pounds of sugar at 6¢ a pound will pay for 8 quarts of berries at 7¢ a quart?

10. If marbles sell at the rate of 4 for a cent, how many can I buy for 12¢?

11. For half a dollar, how many quarts of milk can I buy at the rate of 3¢ a pint?

12. A man having a dollar bill bought $6\frac{1}{2}$ lb. of fish at 8¢ a pound, and with the rest of the money bought oranges at the rate of 3¢ apiece. How many oranges did he buy?

1. What will a gallon and a pint of milk cost at 6¢ a quart?

2. 3 quarts of berries will cost how much at 80¢ a peck?

3. 7 eggs are what part of a dozen, and what will they cost at 24¢ a dozen?

4. Into how many yard-sticks can a stick be cut that is 20 ft. long? How many inches left?

5. What will $4\frac{1}{4}$ yd. of tape cost at 8¢ a yard?

6. How many feet around a school-room that is 23 ft. long and 15 ft. wide?

7. How many days are there in last month and this month and next month added together?

8. A lady bought some cloth for 42¢ and some lace for 36¢. She gave the clerk a dollar bill. What change should she receive?

9. A man paid $64 for a wagon, and $\frac{1}{8}$ as much for a robe. How much did both cost?

10. How many quarts in $\frac{1}{4}$ of a bushel? How many in $\frac{3}{4}$ of a bushel?

11. What will $\frac{1}{8}$ of a bushel of corn cost at 6¢ a quart?

12. A school-room has 56 seats in 8 equal rows. How many seats in a row?

13. How many days since the first day of last month?

14. I put 23 quarts into a ten-gallon can. How many more quarts will it take to fill the can?

15. What will 2 dozen peaches cost at 2¢ each?

16. Which is the most, $\frac{3}{4}$ of 12 or $\frac{2}{3}$ of 12, and how much the most?

1. Mary picks $6\frac{1}{2}$ quarts of berries every day for 6 days. How many quarts does she pick? How many pecks and quarts?

2. Name all the months of the year that have 31 days?

3. I bought 3 five-cent stamps, 8 two-cent stamps, and 16 one-cent stamps. What did they all cost? How much change for a dollar?

4. How many eggs are 22 eggs and $2\frac{1}{2}$ dozen?

5. A boy earned by selling papers 20¢ on Monday, 11¢ on Tuesday, 13¢ on Wednesday, 16¢ on Thursday, 14¢ on Friday, and 11¢ on Saturday. How much did he earn during the week?

6. How many two-cent stamps can you get for three-quarters of a dollar?

7. How many inches long is a stick of wood 2 ft. 3 in. long? How many times shall I have to cut it to make sticks 9 in. long?

8. What ten equal pieces of money make half a dollar? What five equal pieces?

9. If a family eat 6 oranges every day, how long will 4 dozen last them?

10. How many bouquets can I make of 6 doz. roses, if I put 8 roses in each bouquet?

11. When apples sell at 2¢ apiece, and oranges at 3¢ apiece, how much shall I have to pay for a dozen of each?

12. An apple woman had 100 apples to sell at 1¢ apiece. She sold 10 cents' worth to one man, 24 cents' worth to another man, and 36 cents' worth to another. How many apples had she left in her basket?

1. If a bushel of corn weighs 56 lb., what is the weight of a peck?

2. Mary filled her gill dipper with berries 8 times, and poured them into a two-quart pail. How many more gills must she put in to fill the pail?

3. From seven o'clock in the morning until nine o'clock in the evening is how many hours?

4. If the distance round a tree is 3 times the distance through it, what is the distance through a tree that measures 45 feet round it?

5. If 4 quarts of milk make a pound of cheese, how many pounds of cheese can be made of 60 quarts of milk?

6. John earns 53¢ in a day, and James 44¢. How much more does John earn than James in 3 days?

7. How many peck measures can be filled with 50 quarts of berries?

8. How many feet does a boy walk in taking 40 paces, if every pace measures $2\frac{1}{2}$ ft. How many yards?

9. What will $1\frac{1}{2}$ quires of paper cost at the rate of 2 sheets for a cent?

10. 30 lemons and 18 lemons are how many dozen?

11. There are how many pecks in 4 bushels and 2 pecks?

12. How many rods are there in 33 feet?

13. How many feet are there in 4 rods?

14. Make problems about pecks and quarts; quarts and pints; gallons and quarts.

15. Make problems about buying 6 eggs; 30 eggs; 3 qt. of molasses; 6 qt. of beans; 2 gal. 1 qt. of milk.

1. How many weeks in $\frac{3}{4}$ of a year? If a man earns \$6 a week, how much will he earn in $\frac{1}{4}$ of a year?

2. What will $1\frac{2}{3}$ doz. peaches cost at 2¢ apiece?

3. At 18¢ a peck, what shall I pay for $\frac{1}{2}$ bu. of pease?

4. How many yards and feet in 26 ft.? in 38 ft.? in 50 ft.?

5. How many yards around a room 9 ft. square?

6. What will 14 yd. 2 ft. of wire cost at 6¢ a yard?

7. In 25 feet there are how many rods and feet?

8. I have four pieces of wire, measuring 2 yd.; 14 ft.; 6 yd. 2 ft.; 4 yd. 2 ft. How many feet in all? How many yards?

Find the cost of:

9. 16 yd. cloth @ 6¢; 4 lb. meat @ 17¢.

10. 5 lb. fish @ 15¢; $14\frac{1}{2}$ lb. sugar @ 6¢.

11. 7 gal. k. oil @ 13¢; $12\frac{1}{2}$ lb. crackers @ 8¢.

12. $2\frac{1}{2}$ lb. coffee @ 36¢; $1\frac{1}{2}$ lb. tea @ 56¢.

13. $8\frac{1}{2}$ lb. rolled oats @ 12¢; 5 qt. syrup @ 16¢.

Find the cost of one when

14. 18 bbl. flour cost \$90; 16 lb. squash cost 80¢.

15. 3 lb. chops cost 84¢; 6 lb. sausages cost 96¢.

16. 36 lemons cost 72¢; 32 eggs cost 96¢.

17. 12 qt. pease cost 84¢; 5 lb. lamb cost 90¢.

18. 16 T. coal cost \$96; 6 pk. potatoes cost 84¢.

19. How many ounces in $\frac{1}{8}$ of a pound? $\frac{3}{4}$ of a pound?

20. At 15¢ a pound, what cost $5\frac{2}{3}$ lb. of meat? $4\frac{3}{4}$ lb.?

21. What will 3 lb. 8 oz. of cheese cost at 12¢ a pound?

22. At 8¢ a gallon, what will $9\frac{3}{4}$ gal. of milk cost?

SECTION II.

NUMBERS FROM 1 TO 1000.

Addition and Subtraction.

10 ones.
1 ten.
10.

10 tens.
1 hundred.
100.

10 hundreds.
1 thousand.
1000.

1. How many hundreds are represented in the above cut? How many tens? How many ones? Read the whole number of sticks represented. Write in figures.

2. How many hundreds are represented above? How many tens? How many ones? Read the whole number of sticks represented. Write in figures.

3. Show with sticks: 4 ones; 3 tens; 8 tens; 2 hundreds; 5 hundreds; 5 tens and 6 ones; 3 hundreds and 4 tens; 6 hundreds 7 tens and 3 ones.

1. Show with sticks: 10 tens, or 100; 4 hundreds; 8 hundreds; 6 hundreds and 3 tens; 7 hundreds, 4 tens and 5 units or ones; 9 hundreds, 8 tens and 3 units.

2. Read the following, and show with sticks what is expressed by each figure:

123 146 236 487 630 570 804 903 460

3. Read the following, and show with sticks what is expressed by each figure:

4 44 444 6 66 666

4. In 222, the second figure expresses how many times as much as the first? The third figure expresses how many times as much as the second?

5. Read the following numbers:

486 396 749 460 830 108 709

6. Count out 264 sticks. Put in bundles of hundreds, tens, and units.

7. Count bundles of tens to 100, and bundles of hundreds to 1000. Write the numbers as you count.

8. Count by tens to 1000, and write the numbers as you count.

9. How many hundreds and tens in 120, 150, 180, 200, 250, 350, 480, 650, 800, 940, 1000?

10. How many tens in 100, 200, 400, 620, 140, 980?

11. Write in figures: One hundred fifty, two hundred eighty, three hundred ninety, seven hundred sixty, one hundred five, three hundred ninety, seven hundred forty, eight hundred twelve, six hundred seven, four hundred ten.

1. How many hundreds, tens and units in 142, 364, 485, 653, 705, 850, 970, 104, 730, 809?

2.

$100 + 40 + 5 = ?$
$200 + 30 + 6 = ?$
$400 + 80 + 2 = ?$
$600 + 20 + 4 = ?$
$700 + 10 + 6 = ?$
$800 + 90 + 3 = ?$
$300 + 50 + 9 = ?$
$200 + 10 + 8 = ?$
$100 + 10 + 1 = ?$
$800 + 80 + 6 = ?$

3.

Hundreds.	Tens.	Units.	
4	+ 3	+ 2	= ?
5	+ 6	+ 4	= ?
8	+ 6	+ 5	= ?
9	+ 2	+ 3	= ?
7	+ 4	+ 0	= ?
3	+ 0	+ 6	= ?
8	+ 0	+ 0	= ?
5	+ 0	+ 7	= ?
9	+ 9	+ 0	= ?
3	+ 0	+ 1	= ?

4. Put together 16 sticks and 8 sticks. Tie in bundles the tens. How many ten-bundles? How many ones?

5. Put together and tie in bundles in the same way:

$28 + 5$	$34 + 9$	$56 + 8$	$88 + 9$	$26 + 13$
$35 + 18$	$46 + 24$	$35 + 28$	$27 + 38$	$33 + 9$

6. Put together 14 ten-bundles and 8 ten-bundles. Tie in bundles of hundreds. How many hundred-bundles? How many ten-bundles? How many ones?

7. Put together and tie in bundles in the same way:

$240 + 30$ $360 + 80$ $490 - 50$ $370 + 80$

8. Write in words the following:

264 375 569 784 106 270 480 896

Tell what each figure stands for.

Perform with and without objects:

	1.	2.	3.
a.	$200 + 300$	$400 - 200$	$600 + 200 - 100$
b.	$400 + 200$	$600 - 300$	$700 + 300 - 400$
c.	$500 + 400$	$500 - 200$	$800 - 400 + 300$
d.	$600 + 300$	$700 - 300$	$400 - 100 + 600$
e.	$300 + 700$	$1000 - 200$	$500 + 400 - 500$
f.	$100 + 900$	$900 - 400$	$100 + 800 - 600$
g.	$400 + 300$	$700 - 500$	$200 + 700 - 300$
h.	$800 + 200$	$1000 - 800$	$500 + 500 - 600$
i.	$300 + 600$	$900 - 500$	$900 - 400 + 500$

	4.	5.	6.	7.
a.	$900 - 200 - 300$	$100 + 20$	$100 + 44$	$100 - 26$
b.	$700 + 200 + 100$	$100 + 60$	$200 + 40$	$100 - 20$
c.	$800 - 500 + 300$	$200 + 80$	$300 + 24$	$100 - 40$
d.	$1000 - 800 + 200$	$600 + 70$	$500 + 66$	$200 - 10$
e.	$600 + 300 - 200$	$300 + 50$	$800 + 83$	$300 - 70$
f.	$500 + 400 - 100$	$400 + 90$	$700 + 4$	$600 - 50$
g.	$700 + 300 - 900$	$700 + 80$	$800 + 6$	$900 - 90$
h.	$600 + 400 - 800$	$900 + 10$	$900 + 3$	$700 - 60$

	8.	9.	10.	11.
a.	$100 - 16$	$200 + 86$	$150 + 120$	$660 + 130$
b.	$200 - 25$	$300 - 41$	$260 + 310$	$530 + 170$
c.	$300 - 31$	$700 + 65$	$440 + 350$	$460 + 340$
d.	$700 - 64$	$400 - 58$	$240 + 620$	$380 + 430$
e.	$900 - 91$	$700 - 21$	$210 + 180$	$440 + 480$
f.	$700 - 69$	$800 + 56$	$730 + 110$	$380 + 250$
g.	$300 - 55$	$900 - 19$	$650 + 240$	$420 + 390$
h.	$600 - 73$	$500 - 31$	$340 + 450$	$540 + 180$

	1.	2.	3.	4.
a.	480 − 360	800 − 390	400 − 150	100 − 60
b.	500 − 110	700 − 150	1000 − 130	200 − 60
c.	700 − 320	830 − 110	1000 − 620	220 − 60
d.	800 − 460	790 − 470	900 − 320	310 − 60
e.	700 − 610	990 − 620	500 − 380	540 − 60
f.	900 − 480	540 − 120	600 − 420	830 − 40
g.	600 − 230	680 − 370	700 − 580	460 − 80
h.	290 − 180	870 − 460	900 − 610	810 − 30
i.	630 − 110	750 − 340	700 − 380	750 − 60
j.	740 − 120	960 − 550	600 − 510	310 − 40

	5.	6.	7.
a.	450 − 20	540 − 150	850 − 260
b.	450 − 120	620 − 130	720 − 340
c.	380 − 220	740 − 240	430 − 270
d.	460 − 140	690 − 180	240 + 480
e.	580 − 180	310 − 280	620 + 340
f.	890 − 120	730 − 250	710 − 280
g.	800 − 26	350 + 480	340 + 460
h.	800 − 126	640 − 150	550 − 370
i.	250 − 60	830 + 170	820 − 250
j.	250 − 160	380 + 440	710 − 490

8. Write in Roman notation 40, 60, 38, 50, 76, 84, 95, 83, 74, 49, 38, 97.

9. Write in Roman notation 100, 500, 1000, 200, 300, 400, 600, 700, 800, 900.

10. Write in Roman notation 120, 160, 180, 260, 380, 410, 570, 690, 730, 850, 940.

1. Write in Roman notation 106, 206, 308, 401, 507, 609, 703, 805.

2. Write in Roman notation 646, 384, 976, 843, 567, 489, 649, 764, 387, 278, 454, 673.

Add with sticks, and without sticks, the following:

3.	4.	5.	6.	7.	8.	9.
20	40	50	40	60	50	60
30	30	20	30	20	30	20
40	10	20	30	20	40	50

10.	11.	12.	13.	14.	15.	16.
60	90	90	42	43	27	42
50	80	90	20	24	30	23
80	70	80	30	21	62	25

17.	18.	19.	20.	21.	22.	23.
24	24	34	36	64	42	53
33	42	24	27	27	36	28
23	24	43	34	53	55	56

24.	25.	26.	27.	28.	29.	30.
47	46	78	46	55	86	97
24	34	44	83	68	25	84
80	85	45	27	39	68	65

31.	32.	33.	34.	35.	36.	37.
124	136	158	137	265	274	314
32	33	27	52	54	185	151
23	27	15	34	38	63	268

1.	2.	3.	4.	5.	6.	7.
386	218	341	209	390	420	326
217	365	229	317	408	279	74
142	242	196	246	128	268	426

8.	9.	10.	11.	12.	13.	14.
46	38	125	236	402	248	34
93	94	208	360	86	86	408
424	26	74	83	49	193	290
86	530	39	124	240	427	79

15.	16.	17.	18.	19.	20.	21.
56	229	306	159	275	136	127
218	165	147	365	329	349	348
396	183	265	286	140	178	171
127	264	138	174	237	255	283

22. Add fifty-seven, two hundred sixty-four, three hundred nineteen, one hundred forty-one.

23. Add four hundred seventy-eight, two hundred sixty-four, two hundred eight.

24. Add five hundred seven, one hundred ninety, two hundred seventy-six.

25. Add six hundred seventy, eighty-eight, one hundred eight.

26. Find the sum of one hundred seven, two hundred fifty-six, ninety-two, four hundred.

27. Find the sum of one hundred ninety-three, two hundred eight, three hundred seventy, one hundred eighty-six, ninety-five, fifty, forty-six.

Add:

1.	2.	3.	4.	5.	6.	7.	8.
42	36	38	59	16	34	75	58
35	99	47	65	85	87	29	81
83	74	65	38	57	95	74	56
79	47	74	64	26	46	68	47
42	85	85	48	74	26	37	74
16	68	52	85	49	78	83	67
21	83	27	73	68	57	56	35
95	56	19	96	31	81	97	84
68	28	68	57	67	58	62	62
54	97	35	82	92	65	49	43
87	61	96	37	48	32	51	25
36	55	74	96	23	49	38	96
49	72	38	41	54	73	46	79

9.	10.	11.	12.	13.	14.	15.	16.
65	87	58	54	84	22	56	55
84	63	64	27	62	37	84	84
42	54	22	65	76	63	27	23
22	92	96	97	83	84	63	82
89	76	83	63	92	96	32	96
76	85	74	84	55	27	84	23
54	77	97	27	83	62	65	84
98	63	65	62	76	84	97	27
32	82	88	88	94	33	68	63
47	97	32	97	23	86	42	82
43	65	29	65	82	97	88	96
89	84	76	84	97	65	76	55
54	73	83	22	64	84	33	84

Subtract with sticks and without sticks the following:

1.	2.	3.	4.	5.	6.	7.
48	57	34	43	51	40	540
−6	−7	−5	−8	−5	−8	−8

8.	9.	10.	11.	12.	13.	14.
540	540	670	670	670	51	351
−28	−228	−6	−86	−286	−7	−7

15.	16.	17.	18.	19.	20.	21.
351	351	632	632	427	427	334
−27	−127	−8	−58	−9	−59	−8

22.	23.	24.	25.	26.	27.	28.
334	456	456	437	437	540	430
−48	−9	−69	−58	−258	−127	−274

29.	30.	31.	32.	33.	34.	35.
580	400	300	600	500	300	300
−394	−270	−180	−224	−212	−8	−108

36.	37.	38.	39.	40.	41.	42.
600	600	800	800	600	500	900
−9	−109	−7	−107	−108	−207	−308

1.	2.	3.	4.	5.	6.	7.
600	500	200	400	900	100	206
− 407	− 203	− 105	− 306	− 814	− 83	− 74

8.	9.	10.	11.	12.	13.	14.
407	804	703	605	504	743	827
− 109	− 308	− 208	− 307	− 308	− 387	− 436

15.	16.	17.	18.	19.	20.	21.
780	630	400	507	550	674	807
− 708	− 384	− 74	− 270	− 303	− 309	− 170

22.	23.	24.	25.	26.	27.	28.
639	720	407	516	810	505	623
− 247	− 307	− 328	− 347	− 790	− 350	− 227

29.	30.	31.	32.	33.	34.	35.
416	880	941	1000	800	900	807
− 218	− 708	− 676	− 440	− 741	− 876	− 670

36.	37.	38.	39.	40.	41.	42.
908	880	500	608	890	422	400
− 278	− 693	− 294	− 324	− 688	− 384	− 392

43. From 870 take (*a*) 390; (*b*) 468; (*c*) 294; (*d*) 781.
44. From 900 take (*a*) 260; (*b*) 427; (*c*) 365; (*d*) 539.
45. From 706 take (*a*) 350; (*b*) 408; (*c*) 238; (*d*) 487.

	r.	*q.*	*p.*	*o.*	*n.*	*m.*	*l.*	*k.*	*j.*	*i.*	*h.*	*g.*	*f.*	*e.*	*d.*	*c.*	*b.*	*a.*
A.	9	3	4	8	1	5	7	3	4	6	2	4	8	4	3	9	6	2
B.	7	1	5	6	7	6	4	2	7	1	3	2	6	2	7	4	5	3
C.	5	5	3	9	4	1	8	4	6	9	7	1	7	5	4	6	1	5
D.	3	6	7	7	5	4	3	2	9	7	1	9	4	3	7	4	3	9
E.	8	4	1	6	3	7	9	1	5	3	8	6	9	4	2	7	1	9
F.	7	1	7	4	5	9	7	3	6	1	4	9	2	3	8	4	2	7
G.	6	6	4	8	1	6	4	4	2	4	1	8	7	5	9	8	3	4
H.	2	8	3	5	2	8	2	3	9	2	4	4	4	2	7	2	1	8
I.	9	1	8	4	1	8	8	7	4	8	4	2	8	8	3	6	4	3
J.	8	4	9	2	7	4	5	8	3	6	5	6	5	4	6	4	3	7
K.	4	6	3	9	6	3	9	1	4	7	3	8	3	5	9	5	2	2
L.	2	7	7	6	2	7	6	6	5	4	4	9	1	7	5	2	4	4
M.	7	5	9	7	8	2	7	7	2	9	4	2	9	1	1	6	3	2
N.	5	6	2	5	7	9	4	3	9	7	1	6	7	4	8	3	2	9
O.	6	7	1	8	5	8	5	6	2	5	5	7	8	4	1	9	4	2
P.	3	8	4	2	3	2	1	7	5	4	7	4	2	5	8	2	7	5

1. Add columns *b a* as tens and units. $62 + 53$, etc.
2. Add columns *c b* as tens and units.
3. In the same manner add *d c*.
4. Add *e d*.
5. Add *f e*.
6. Add *g f*.
7. Add *h g*.
8. Add *i h*.
9. Add *j i*.
10. Add *k j*.
11. Add *l k*.
12. Add *m l*.
13. Add *n m*.
14. Add *o n*.
15. Add *p o*.
16. Add *q p*.
17. Add *r q*.
18. Subtract 184 from *c b a* (962 — 184), etc.
19. Subtract 129 from *f e d*; *i h g*; *l k h*.
20. Subtract 89 from *d c b*; *e d c*; *h g f*.
21. From the sum of column *c b* take the sum of column *b a*.

Questions on Drill Table, page 22:

1. From *c b a* of *A* subtract *c b a* of *B* as hundreds, tens, and units (962 – 453).
2. In the same way subtract *B* from *A* in columns *f e d; i h g; l k j; o n m; r q p.*
3. *C* – *D* in *c b a; f e d; i h g; l k j; o n m; r q p.*
4. *E* – *F* in *c, b, a; f, e, d; i, h, g,* etc.
5. *G* – *H* in *c, b, a; f, e, d; i, h, g,* etc.
6. *I* – *J* in *c, b, a; f, e, d; i, h, g,* etc.
7. *K* – *L* in *c, b, a; f, e, d; i, h, g,* etc.
8. *M* – *N* in *c, b, a; f, e, d; i, h, g,* etc.
9. *O* – *P* in *c, b, a; f, e, d; i, h, g,* etc.

10. One week a railroad company bought 165 cords of wood, 115 cords, 396 cords, 200 cords and 87 cords. How much wood was bought?

11. From a flock of eight hundred sheep there were sold at one time two hundred seventy-eight sheep and at another time three hundred five sheep. How many sheep remained?

12. There are 720 hours in April, of which a boy attends school 95 hours. How many hours is he out of school during the month?

13. In a graded school there were present one day in grade I, 43 pupils; in grade II, 46; in grade III, 39; in grade IV, 48; in grade V, 37; in grade VI, 34; and in the other three grades enough to make 318. How many pupils in the three highest grades? How many pupils in the four lowest grades?

	a.	*b.*	*c.*	*d.*	*e.*
1.	400−174	300−106	500−208	800−407	500−402
2.	850−207	330−142	806−387	770−409	600−394
3.	330−270	480−397	570−276	639−492	409−270
4.	693−654	509−229	437− 76	509−174	437−209
5.	787−439	613−347	827−108	400− 96	812−390

6. From 1000 take (*a*) 407; (*b*) 630; (*c*) 794; (*d*) 394; (*e*) 555; (*f*) 909.

7. (305 + 270 + 17 + 109) − (76 + 107 + 18 + 280).

8. (630 + 146 + 89 + 70) − (208 + 394 + 65).

9. (104 + 240 + 175 + 483) − (74 + 108 + 273 + 39).

Add the numbers indicated by the following letters:

a. 43	*n.* 64	**10.** *a b c d e*
b. 87	*o.* 79	**11.** *c d e f g*
c. 68	*p.* 57	**12.** *f g h i j*
d. 94	*q.* 30	**13.** *i j k l m*
e. 27	*r.* 86	**14.** *m n o p q*
f. 65	*s.* 43	**15.** *r s t u v*
g. 88	*t.* 29	**16.** *t u v w x*
h. 46	*u.* 95	**17.** *v w x y z*
i. 13	*v.* 52	**18.** *g i r l*
j. 75	*w.* 36	**19.** *h o u s e*
k. 89	*x.* 64	**20.** *s c h o o l*
l. 57	*y.* 98	**21.** *g e o g r a p h y*
m. 72	*z.* 71	**22.** *a r i t h m e t i c*

23.	**24.**	**25.**
$a+b+c-d$	$c+d+e-f$	$e+f+g+h+i-j$
$g+h+i-j$	$i+j+k-l$	$k+l+m-(o+p)$

1. A raised one year 183 bu. corn and 96 bu. wheat; B raised 265 bu. corn and 268 bu. wheat; C raised 327 bu. corn and 194 bu. wheat; D raised 98 bu. corn and 468 bu. wheat. How many bushels of each did all raise?

2. An orchard contained 786 fruit trees; 398 of them were apple trees and the rest were pear trees. How many pear trees?

3. The distance from a city to a certain town west of it is 425 miles, and to another town east of it 317 miles. How many miles between the two towns? (Draw diagram.)

4. The highest altitude in Louisiana is 321 feet; in Mississippi it is 516 feet. What is the difference?

5. The number of newspapers published (1892) in Virginia was 287; North Carolina, 219; South Carolina, 132; Georgia, 292. How many were published in all four States?

6. The number of newspapers published (1892) in Maine was 183; New Hampshire, 131; Vermont, 82; Connecticut, 207; Rhode Island, 71. How many in these five New England States?

7. The number of newspapers published (1892) in Massachusetts was 657. How does this number compare with the number published in the other New England States?

8. The Pilgrims landed at Plymouth 156 years before the Declaration of Independence and 128 years after the discovery of America. How many years between the discovery of America and the Declaration of Independence? Give the year of each of these events.

1. Add in a column the number of days in all the months of a common year. January 31, February 28, March 31, April 30, May 31, June 30, July 31, August 31, September 30, October 31, November 30, December 31.

2. A man having $1000 paid $65 for a sideboard, $78 for chairs, $136 for carpets and $325 for a piano. How much had he left?

3. I pay $480 for a piece of land and $75 more to fence it. If I sell it for $620 what do I gain?

4. The four quarters of an ox weighed 194 lb., 198 lb., 226 lb., 219 lb. What was the total weight?

5. There were on a stock farm 484 sheep, 365 cows, and 242 horses. How many animals in all?

6. The distance in a straight line from Boston to New York is 208 miles; from New York to Washington 142 miles. How far from Boston to Washington?

7. I buy at the store — for — ¢, — for — ¢, and — for — ¢. How much change do I get if I give the clerk a — dollar bill?

8. The distance from — to — is — (paces or yards or feet); and from — to — the distance is —. What is the difference of distance?

9. Make and perform problems about:

a. The number of pupils in each and all schools of your town or your building.

b. Difference or sum of distances from one place to another.

c. The weight of several persons whom you know.

SECTION III.

NUMBERS FROM 1 TO 1000.

Multiplication and Division.

1. Put together 6 ten-bundles of sticks. How many sticks have you? Add together 6 tens + 6 tens + 6 tens + 6 tens. How many tens of sticks have you? How many hundreds? How many hundreds and tens? 60 multiplied by 4 is what?

2. Add together 18 sticks + 18 sticks + 18 sticks. How many times 18 sticks have you? Put the tens together in bundles. How many tens have you? How many tens and ones?

3. 18 multiplied by 3 is what?

Multiply with and without the aid of objects:

4. 2 times 4 tens = — tens or *

5. 3 times 6 tens = — tens or *

6. 4 times 8 tens = — tens or *

7. 7 times 5 tens = — tens or *

8. 4 times 2 hundreds = — hundreds or *

9. 2 times 3 hundreds = — hundreds or *

10. 6 times 1 hundred = — hundreds or *

11. 3 times 3 hundreds = — hundreds or *

12. 4 times 5 tens are how many hundreds?

13. 8 times 3 tens are how many hundreds and tens?

* Write in figures.

1.	2.	3.	4.
30×2	50×3	60×5	200×2
30×3	60×4	80×8	200×3
40×3	70×3	50×9	300×2
40×4	80×4	60×8	200×4

5. To multiply 32 sticks by 3: How many ones are 3 times 2 ones? How many tens are three times 3 tens? How many tens and ones have you?

6. To multiply 27 sticks by 3: How many ones are 3 times 7 ones? How many tens and ones? How many tens are 3 times 2 tens? How many tens in all have you? How many tens and ones?

In the same way multiply with objects:

	7.	8.	9.	10.
a.	3×3	2×2	1×6	22×2
b.	40×3	60×2	80×6	32×3
c.	43×3	62×2	81×6	41×4
d.	2×4	3×2	3×3	24×2
e.	30×4	50×2	90×3	83×3
f.	32×4	53×2	93×3	41×8

	11.	12.	13.	14.
a.	2×4	1×5	2×3	321×3
b.	10×4	10×5	00×3	224×2
c.	200×4	300×5	400×3	103×3
d.	212×4	111×5	302×3	202×4
e.	3×2	3×3	1×5	112×4
f.	40×2	20×3	00×5	303×3
g.	300×2	200×3	200×5	234×2
h.	343×2	423×3	201×5	202×4

	1.	2.	3.
a.	$(200+31)\times 2$	$212\times 3-600$	$(220-80)\times 2$
b.	$(500-88)\times 2$	$101\times 5+400$	$(270+160)\times 2$
c.	$(300+23)\times 2$	$211\times 4-300$	$(970-668)\times 3$
d.	$(400-60)\times 2$	$102\times 3+200$	$(256+244)\times 2$
e.	$(300+104)\times 2$	$202\times 4-500$	$(700-389)\times 3$
f.	$(400-79)\times 3$	$111\times 5-300$	$43\times 3+400$

	4.	5.	6.	7.	8.
a.	5×2	6×3	9×4	8×8	7×7
b.	50×2	40×3	80×4	80×8	20×7
c.	55×2	46×3	89×4	88×8	27×7
d.	4×4	5×4	7×5	7×6	9×9
e.	40×4	30×4	80×5	50×6	30×9
f.	44×4	35×4	87×5	57×6	39×9

	9.	10.	11.	12.	13.
a.	85×2	54×6	32×8	72×7	88×7
b.	27×11	48×4	96×7	54×12	96×4
c.	89×4	32×9	53×6	57×8	83×5
d.	76×5	84×8	84×9	73×6	22×12
e.	99×6	65×9	73×5	92×7	83×7
f.	42×7	94×7	92×8	33×11	92×8

	14.	15.	16.	17.
a.	50×2	350×2	232×4	123×7
b.	100×2	243×3	131×7	126×4
c.	150×2	150×5	212×5	154×3
d.	130×2	220×4	151×6	165×4
e.	110×3	190×3	141×3	112×9
f.	160×4	170×3	121×8	156×5

Written Exercises.

Multiply with and without objects :

1.	2.	3.	4.	5.	6.	7.
33	221	302	106	104	114	218
× 3	× 4	× 2	× 4	× 6	× 7	× 4
8.	**9.**	**10.**	**11.**	**12.**	**13.**	**14.**
118	226	160	260	120	161	181
× 5	× 3	× 2	× 3	× 7	× 5	× 5
15.	**16.**	**17.**	**18.**	**19.**	**20.**	**21.**
232	163	187	123	192	386	122
× 4	× 5	× 4	× 8	× 5	× 2	× 8
22.	**23.**	**24.**	**25.**	**26.**	**27.**	**28.**
117	97	297	468	116	35	163
× 7	× 8	× 3	× 2	× 8	× 11	× 6
29.	**30.**	**31.**	**32.**	**33.**	**34.**	**35.**
69	164	305	247	49	129	140
× 9	× 5	× 3	× 4	× 12	× 6	× 7
36.	**37.**	**38.**	**39.**	**40.**	**41.**	**42.**
199	287	176	109	79	87	67
× 5	× 3	× 5	× 8	× 12	× 11	× 12
43.	**44.**	**45.**	**46.**	**47.**	**48.**	**49.**
59	107	157	69	207	63	130
× 11	× 9	× 6	× 12	× 4	× 9	× 7

	1.	2.	3.	4.	5.
	12 times	7 times	9 times	5 times	11 times
a.	37	58	87	162	56
b.	53	96	65	187	48
c.	64	75	92	108	76
d.	82	82	38	127	32
e.	78	97	73	184	67

Multiply each number in the following columns by 5; by 6; by 7; by 8; by 9; by 10:

	6.	7.	8.	9.	10.	11.	12.
a.	89	26	82	77	76	77	89
b.	76	89	93	93	48	68	76
c.	53	77	67	86	92	57	93
d.	92	93	85	27	76	42	84

13. Add the columns and multiply the answers of the first four examples by 2; of the last three by 3.

	a.	*b.*	*c.*	*d.*	*e.*	*f.*	
14.	106	128	165	162	149	107	× 6
15.	87	96	74	38	82	97	× 7
16.	56	48	72	93	65	96	× 8
17.	57	87	36	82	98	86	× 9
18.	49	66	83	76	58	67	× 11

Multiply each number by multiplier on the same line at right of page.

19. Subtract the sum of the *a*'s from the sum of the *b*'s; that of the *c*'s from the *d*'s, and the sum of the *e*'s from the *f*'s.

1.	2.
a. $(156 \times 2) + (95 \times 5)$	$(144 \times 3) + (76 \times 7)$
b. $(104 \times 6) + (46 \times 4)$	$(127 \times 4) + (34 \times 5)$
c. $(246 \times 2) + (47 \times 8)$	$(185 \times 3) + (56 \times 3)$

3.	4.
a. $(139 \times 6) + (38 \times 4)$	$(48 \times 8) - (16 \times 6)$
b. $(24 \times 8) + (125 \times 7)$	$(75 \times 6) - (27 \times 9)$
c. $(164 \times 5) + (28 \times 6)$	$(320 \times 3) - (71 \times 7)$

5.	6.
a. $(94 \times 6) - (46 \times 9)$	$(58 \times 7) - (36 \times 8)$
b. $(204 \times 4) - (63 \times 5)$	$(136 \times 5) - (89 \times 6)$
c. $(194 \times 4) - (11 \times 8)$	$(176 \times 5) - (34 \times 9)$

If the work is correct, the sums of the products in each of the following four exercises will be the same as the number multiplied by 10. Why?

7. Multiply 365 by 3, 5, and 2.

8. Multiply 269 by 6, 2, and 2.

9. Multiply 196 by 5, 3, and 2.

10. Multiply 97 by 7, 3, and 1.

Multiply with the aid of objects:

11.	12.	13.
$36 \times 4 = 144$	$36 \times 6 =$	$42 \times 3 =$
$36 \times 10 = 360$	$36 \times 10 =$ ___	$42 \times 10 =$ ___
$36 \times 14 =$	$36 \times 16 =$	$42 \times 13 =$

14.	15.	16.
$37 \times 5 =$	$46 \times 7 =$	$38 \times 8 =$
$37 \times 10 =$ ___	$46 \times 10 =$ ___	$38 \times 10 =$ ___
$37 \times 15 =$	$46 \times 17 =$	$38 \times 18 =$

1.

$64 \times 5 =$
$64 \times 10 =$
$64 \times 15 =$

2.

$53 \times 7 =$
$53 \times 10 =$
$53 \times 17 =$

3.

$66 \times 6 =$
$66 \times 10 =$
$66 \times 16 =$

4.

$31 \times 9 =$
$31 \times 10 =$
$31 \times 19 =$

5.

$84 \times 8 =$
$84 \times 10 =$
$84 \times 18 =$

6.

$79 \times 5 =$
$79 \times 10 =$
$79 \times 15 =$

7.

$18 \times 6 =$
$18 \times 20 =$
$18 \times 26 =$

8.

$24 \times 3 =$
$24 \times 20 =$
$24 \times 23 =$

9.

$16 \times 8 =$
$16 \times 20 =$
$16 \times 28 =$

10.

$27 \times 4 =$
$27 \times 30 =$
$27 \times 34 =$

11.

$16 \times 5 =$
$16 \times 40 =$
$16 \times 45 =$

12.

$21 \times 3 =$
$21 \times 40 =$
$21 \times 43 =$

13.	**14.**	**15.**	**16.**	**17.**	**18.**	**19.**
65	84	37	46	38	64	41
$\times$ 14	$\times$ 16	$\times$ 12	$\times$ 18	$\times$ 16	$\times$ 15	$\times$ 18

20.	**21.**	**22.**	**23.**	**24.**	**25.**	**26.**
38	42	61	46	37	52	87
$\times$ 12	$\times$ 14	$\times$ 13	$\times$ 14	$\times$ 18	$\times$ 15	$\times$ 17

27.	**28.**	**29.**	**30.**	**31.**	**32.**	**33.**
29	65	47	48	36	42	36
$\times$ 34	$\times$ 14	$\times$ 19	$\times$ 15	$\times$ 16	$\times$ 13	$\times$ 17

1.	**2.**	**3.**	**4.**	**5.**	**6.**	**7.**
46	52	33	71	58	43	35
× 16	× 13	× 18	× 12	× 14	× 15	× 15

8.	**9.**	**10.**	**11.**	**12.**	**13.**	**14.**
86	40	63	39	49	46	39
× 11	× 18	× 12	× 14	× 19	× 17	× 18

15.	**16.**	**17.**	**18.**	**19.**	**20.**	**21.**
44	36	69	57	38	92	46
× 12	× 12	× 13	× 14	× 17	× 10	× 18

22.	**23.**	**24.**	**25.**	**26.**	**27.**	**28.**
49	59	39	52	68	25	62
× 19	× 15	× 19	× 16	× 13	× 17	× 14

29.	**30.**	**31.**	**32.**	**33.**	**34.**	**35.**
44	45	72	43	28	63	56
× 19	× 18	× 13	× 16	× 17	× 14	× 15

	a.	*b.*	*c.*	*d.*	*e.*	*f.*
36.	56	50	43	52	66	59 × 14
37.	53	61	45	59	57	38 × 15
38.	29	37	52	39	45	18 × 16
39.	39	45	19	24	31	17 × 17

40.

$(915 - 876) \times 14$
$(842 - 793) \times 15$
$(728 - 679) \times 17$

41.

$(1000 - 967) \times 18$
$(815 - 788) \times 19$
$(656 - 591) \times 14$

1.

$(47 \times 8) + (46 \times 13)$
$(42 \times 12) - (68 \times 3)$
$(55 \times 13) - (96 \times 5)$
$(52 \times 7) + (153 \times 4)$

2.

$(68 \times 13) - (29 \times 9)$
$(204 \times 4) - (53 \times 15)$
$(115 \times 8) - (37 \times 18)$
$(125 \times 7) - (28 \times 19)$

Multiply :

3.	**4.**	**5.**	**6.**	**7.**	**8.**	**9.**
24	34	27	23	35	32	41
23	26	31	34	22	24	22
10.	**11.**	**12.**	**13.**	**14.**	**15.**	**16.**
27	34	43	29	26	35	38
32	27	21	30	32	28	22
17.	**18.**	**19.**	**20.**	**21.**	**22.**	**23.**
18	16	13	15	21	23	22
52	53	62	58	46	27	29
24.	**25.**	**26.**	**27.**	**28.**	**29.**	**30.**
25	24	14	34	15	42	27
28	31	65	29	56	21	32

31. Find how many groups of two sticks can be made from 42 sticks. How many times are 2 sticks contained in 42 sticks? $42 \div 2 = ?$

32. Find how many groups of 20 sticks can be made from400 sticks. How many times are two tens of sticks contained in 40 tens of sticks? $400 \div 20 = ?$

33. Divide 84 sticks into four groups. How many sticks in each group? There are four groups of how many tens in 8 tens? There are four groups of how many ones in 4 ones? $84 \div 4 = ?$

Oral Exercises.

Divide with and without the aid of objects:

	1.	2.	3.	4.
a.	$200 \div 2$	$800 \div 4$	$240 \div 2$	$400 \div 2$
b.	$20 \div 2$	$40 \div 4$	$630 \div 3$	$60 \div 2$
c.	$220 \div 2$	$840 \div 4$	$550 \div 5$	$2 \div 2$
d.	$600 \div 3$	$900 \div 3$	$690 \div 3$	$462 \div 2$
e.	$30 \div 3$	$60 \div 3$	$840 \div 4$	$936 \div 3$
f.	$630 \div 3$	$960 \div 3$	$770 \div 7$	$848 \div 4$

	5.	6.	7.	8.
a.	$844 \div 4$	$16 \div 2$	$355 \div 5$	$120 \div 2$
b.	$684 \div 2$	$160 \div 2$	$208 \div 4$	$12 \div 2$
c.	$206 \div 2$	$14 \div 7$	$186 \div 3$	$130 \div 2$
d.	$555 \div 5$	$140 \div 7$	$486 \div 6$	$240 \div 4$
e.	$666 \div 6$	$240 \div 4$	$357 \div 7$	$24 \div 4$
f.	$862 \div 2$	$250 \div 5$	$648 \div 8$	$260 \div 4$

	9.	10.	11.	12.
a.	$170 \div 2$	$140 \div 2$	$294 \div 7$	$364 \div 7$
b.	$140 \div 4$	$16 \div 2$	$424 \div 8$	$432 \div 8$
c.	$190 \div 2$	$156 \div 2$	$567 \div 9$	$585 \div 9$
d.	$260 \div 5$	$210 \div 3$	$154 \div 2$	$595 \div 7$
e.	$330 \div 6$	$216 \div 3$	$138 \div 3$	$688 \div 8$

	13.	14.	15.	16.
a.	$200 \div 2$	$400 \div 2$	$543 \div 3$	$874 \div 2$
b.	$100 \div 2$	$120 \div 2$	$728 \div 2$	$468 \div 4$
c.	$300 \div 2$	$520 \div 2$	$455 \div 5$	$696 \div 6$
d.	$500 \div 2$	$450 \div 3$	$726 \div 6$	$749 \div 7$
e.	$900 \div 6$	$640 \div 4$	$528 \div 4$	$655 \div 5$

How many times

1.	2.	3.	4.	5.
3 in	6 in	7 in	9 in	8 in
210	486	560	450	648
240	372	700	648	896
186	300	854	837	744
279	564	637	540	400

How many times

6.	7.	8.	9.	10.
5 in	4 in	2 in	10 in	12 in
1000	320	286	450	840
185	364	906	866	720
290	256	436	530	492
385	168	264	876	612

11. $__ \times 3 = 120$
12. $__ \times 6 = 540$
13. $__ \times 8 = 968$
14. $__ \times 10 = 1000$
15. $__ \times 11 = 891$
16. $__ \times 7 = 714$

17. $__ \times 12 = 240$
18. $__ \times 7 = 497$
19. $__ \times 5 = 485$
20. $__ \times 2 = 762$
21. $__ \times 4 = 468$
22. $__ \times 9 = 738$

	a.	*b.*	*c.*	*d.*	*e.*	
23.	132	240	248	336	384	$\div 4$
24.	245	355	160	475	230	$\div 5$
25.	132	276	342	450	546	$\div 6$
26.	168	336	672	504	252	$\div 7$
27.	472	544	312	520	696	$\div 8$
28.	288	414	738	441	792	$\div 9$

Written Exercises.

Perform with and without objects :

1.	2.	3.	4.	5.
4)84	3)96	3)120	6)180	4)480
6.	**7.**	**8.**	**9.**	**10.**
6)360	3)690	8)880	5)100	4)124
11.	**12.**	**13.**	**14.**	**15.**
4)160	4)180	3)132	8)176	9)203
16.	**17.**	**18.**	**19.**	**20.**
5)210	7)364	4)380	6)204	8)208
21.	**22.**	**23.**	**24.**	**25.**
6)504	8)304	7)406	6)276	9)315
26.	**27.**	**28.**	**29.**	**30.**
8)712	4)836	5)910	3)462	7)392
31.	**32.**	**33.**	**34.**	**35.**
2)358	7)826	4)984	8)712	3)804
36.	**37.**	**38.**	**39.**	**40.**
7)805	5)735	3)793	9)981	6)834
41.	**42.**	**43.**	**44.**	**45.**
2)598	8)864	3)918	4)816	8)784
46.	**47.**	**48.**	**49.**	**50.**
6)504	8)664	9)459	7)672	6)834

1.	2.	3.	4.	5.
10) 800	10) 640	11) 220	12) 480	12) 180
6.	**7.**	**8.**	**9.**	**10.**
12) 556	11) 836	14) 392	17) 680	16) 896
11.	**12.**	**13.**	**14.**	**15.**
14) 360	15) 480	18) 424	16) 836	17) 342
16.	**17.**	**18.**	**19.**	**20.**
14) 620	18) 815	15) 703	12) 862	19) 742
21.	**22.**	**23.**	**24.**	**25.**
17) 833	15) 983	17) 627	19) 764	14) 892
26.	**27.**	**28.**	**29.**	**30.**
18) 846	17) 324	12) 324	15) 945	14) 782
31.	**32.**	**33.**	**34.**	**35.**
19) 987	13) 586	13) 728	16) 768	18) 486
36.	**37.**	**38.**	**39.**	**40.**
16) 784	19) 972	17) 1000	15) 748	13) 936
41.	**42.**	**43.**	**44.**	**45.**
14) 966	15) 999	17) 796	18) 972	19) 839
46.	**47.**	**48.**	**49.**	**50.**
16) 787	17) 646	19) 969	14) 876	16) 928
51.	**52.**	**53.**	**54.**	**55.**
21) 494	24) 497	24) 896	26) 538	23) 980

1.	2.	3.	4.	5.
26) 586	35) 524	30) 643	31) 632	32) 684
6.	**7.**	**8.**	**9.**	**10.**
34) 690	33) 683	36) 748	35) 723	37) 786
11.	**12.**	**13.**	**14.**	**15.**
32) 684	38) 782	37) 804	35) 783	39) 820
16.	**17.**	**18.**	**19.**	**20.**
42) 946	46) 936	43) 937	44) 860	45) 964
21.	**22.**	**23.**	**24.**	**25.**
36) 863	42) 952	53) 869	46) 743	33) 869
26.	**27.**	**28.**	**29.**	**30.**
62) 912	49) 983	53) 864	43) 837	27) 697

	a.	*b.*	*c.*	*d.*
31. How many times 18 in	305?	464?	783?	904?
32. How many times 17 in	406?	719?	500?	813?
33. How many times 14 in	870?	692?	707?	305?
34. How many times 82 in	903?	862?	732?	890?

35.	36.	37.	38.
$836 \div 11$	$702 \div 14$	$962 \div 17$	$500 \div 11$
$439 \div 18$	$836 \div 16$	$404 \div 13$	$695 \div 15$

39. $(34+56+85+77) \div 2$	**45.** $(75+86+39+19) \div 3$
40. $(36+89+76+48) \div 4$	**46.** $(57+69+46+77) \div 5$
41. $(84+92+45+24) \div 6$	**47.** $(29+56+81+90) \div 7$
42. $(37+48+59+60) \div 8$	**48.** $(46+57+68+79) \div 9$
43. $(48+46+43+61) \div 11$	**49.** $(76+89+48+39) \div 10$
44. $(32+45+83+20) \div 12$	**50.** $(88+98+89+49) \div 12$

1. $(927 - 698) \div 8$
2. $(1000 - 897) \div 2$
3. $(900 - 586) \div 4$
4. $(26 \times 17) \div 6$
5. $(49 \times 18) \div 3$
6. $(63 \times 15) \div 9$
7. $(876 - 299) \div 5$
8. $(798 - 427) \div 3$
9. $(986 - 180) \div 7$
10. $(37 \times 19) \div 11$
11. $(32 \times 17) \div 8$
12. $(56 \times 12) \div 6$
13. $(914 - 117) \div 7$
14. $(706 - 28) \div 10$
15. $(724 - 185) \div 4$
16. $(68 \times 13) \div 2$
17. $(32 \times 19) \div 12$
18. $(86 \times 11) \div 7$

19.	**20.**	**21.**	**22.**	**23.**
12) 14*	8) 93*	15) 78*	6) 93*	18) 54*
24.	**25.**	**26.**	**27.**	**28.**
9) 7*3	7) 4*6	6) 8*4	4) *34	5) 86*
29.	**30.**	**31.**	**32.**	**33.**
8) *64	6) *72	8) 4*3	5) 96*	4) 3*0
34.	**35.**	**36.**	**37.**	**38.**
12) *83	9) 7*4	14) 86*	16) 6*4	18) *39
39.	**40.**	**41.**	**42.**	**43.**
18) 86*	15) 8*4	19) 3*0	17) 9*0	14) 86*
44.	**45.**	**46.**	**47.**	**48.**
14) 7*2	13) 2*9	19) 8*4	12) 56*	18) 99*
49.	**50.**	**51.**	**52.**	**53.**
12) 78*	15) 38*	18) 80*	14) 7*0	15) 93*

* Supply any figure.

Oral and Written Exercises.

Find the result of

1. $31 - 9 + (6 \times 3)$
2. $(63 + 9 \div 12) \times (14 - 8)$
3. $(12 \times 11 - 12) \div (4 \times 5)$
4. $(48 \div 12) \times (8 \times 15)$
5. $18 \times 2 + 14 \times 10$
6. $33 \times 4 - 66 \div 11$
7. $100 - (15 \times 5) \div 5$
8. $(75 \times 2) \times (45 \div 15)$

9. What number divided by 12 is equal to 7? By 15 is equal to 3?

10. Find one of the 12 equal parts of 96; of 108; of 960; of 720; of 912.

11. Find one of the nine equal parts of 63; of 63 tens; of 8 tens 1 unit; of 6 hundreds 3 tens.

12. If a Mississippi steamboat burns 7 cords of wood per day, in how many days will she burn 35 cords? 280 cords? 301 cords? 686 cords?

13. How many times can 13 be subtracted from 39? 16 from 48? 16 from 64?

14. A man bought a piano for $360, and paid for it in 9 monthly payments. How much was each payment?

15.	16.
63 bushels $\times$ 4 = ?	123 months $\times$ 7 = ?
87 pecks $\times$ 8 = ?	85 days $\times$ 11 = ?
32 gallons $\times$ 12 = ?	52 weeks $\times$ 14 = ?
53 quarts $\times$ 14 = ?	32 inches $\times$ 16 = ?
96 feet $\times$ 8 = ?	48 years $\times$ 13 = ?

17. A boy walked one day 8 miles and the next day 10 miles. What was the average number of miles a day that he walked?

1. If a man walks 396 miles in 18 days, how many miles on the average does he walk in 1 day?

2. There are 24 sheets in a quire. How many sheets in 19 quires? How many quires and sheets in 100 sheets?

3. How many quires and sheets in 684 sheets?

4. If there are 36 gallons in a barrel of beer, how many gallons in 16 barrels?

5. Paid $848 for a stable, and sold it so as to gain $135. What was the selling price?

6. The expenses of a party of 3 men on a journey to California were $1000. What was each man's share?

7. The four quarters of an ox weighed 137 pounds, 195 pounds, 175 pounds, and 180 pounds. What was their total weight?

Make examples, one in multiplication and one in division, to fit each of the following:

8.

1 ton	$—
1 "	$—
1 "	$—
1 "	$—
1 "	$—
Cost of all,	$30

9.

1 piano . . .	$ —
1 " . . .	$ —
1 " . . .	$ —
1 " . . .	$ —
1 " . . .	$ —
Cost of all,	$940

10.

1 chamber set	$ —
1 " "	$ —
1 " "	$ —
1 " "	$ —
Cost of all	$992

1. $\$253 + — = \$900$. $— + \$478 = \$800$.

2. How many months in 8 years? in 26 years?

3. A school-room contains 288 seats in 12 equal rows. How many seats in each row?

4. How many days in the summer months?

5. I have spent July at the sea-shore for 14 years. How many days have I spent at the sea-shore in that time? How many weeks?

6. If it takes 8 nails to fasten a horseshoe, how many horseshoes can be fastened with 864 nails? How many horses can be shod "all around" with this number of shoes?

7. Six spoons are a set. How many spoons in seventy-five sets? How many in twelve dozen sets?

8. The distance by rail from Chicago to Highland Park is 23 miles; from Highland Park to Waukegan 13 miles; from Waukegan to Milwaukee 49 miles, and from Milwaukee to Madison 82 miles. How many miles from Chicago to each of these places?

9. A train of cars starting from Chicago at 5 P. M., and going at the rate of 1 mile in 2 minutes, will arrive when at each of the above places?

10. Make and perform problems about:

a. Rows of corn and hills in a row.

b. A ship that sails — an hour, and is — miles from New York.

c. The number of pages in all your books.

d. $48 + 37 + 64$. *e.* $690 - 435$.

f. $480 \div 12$. *g.* 165×6.

SECTION IV.

UNITED STATES MONEY.

Oral and Written Exercises.

— cents make 1 dime.
— dimes or — cents make 1 dollar.

1. Read the following :

$6	$8	$26	$38	$50	$86	$98
$100	$150	$304	$683	$505	$630	$839

2. Read the following :

$1.25	$6.48	$7.90	$8.30	$9.06	$7.01
$6.00	$7.08	$3.40	$7.06	$8.10	$6.04

3. Read the following :

$1.42	$0.42	$0.70	$0.04	$0.08	$0.10

4. How many dollars, dimes and cents in

$4.86	$9.83	$8.60	$7.06	$8.10	$0.01

5. How many cents in

$4.68	$7.80	$9.06	$6.00	$5.50	$0.60

6. How many dimes in

$6.90	$8.39	$7.43	$6.04	$0.74	$4.00

7. Write : six dollars ; eighty-four dollars ; ninety-six cents ; eight cents ; three dollars sixty cents ; four dollars six cents.

1. I paid \$64 for a cow, \$140 for a horse. What did both cost? What should I have to pay for 6 cows and 3 horses?

2. Mr. Brown's expenses for a week were as follows: Groceries, \$3.64; meat, \$2.20; other expenses, \$3.78. What were his expenses for the week?

3. Write the following sums in a column and add: 48¢; \$6; 37¢; 6 dimes; \$1.34; 8¢.

4. Write and add: Sixty cents; one dollar seventy-five cents; ninety cents; six cents; one dollar four cents; two dollars forty cents.

5. A pedler's profits were \$1.20 on Monday; \$1.35 Tuesday; \$0.87 Wednesday; \$1.45 Thursday; \$1.08 Friday; \$2.36 Saturday. How much were his profits for the week?

	a.	*b.*	*c.*	*d.*	*e.*	*f.*	*g.*
6.	\$3	\$ .03	\$3.03	\$4.08	\$1.04	\$ .92	\$2.02
	× 2	× 2	× 2	× 2	× 3	× 3	× 3

	a.	*b.*	*c.*	*d.*	*e.*	*f.*
7.	\$ .50	\$2.50	\$2.58	\$3.07	\$1.87	\$ .87
	× 3	× 3	× 3	× 2	× 5	× 8

8. Find cost of

7 plates at 37¢ apiece.
14 cups at 25¢ apiece.
4 pitchers at 56¢ apiece.
6 baskets at 75¢ apiece.
8 lamps at 87¢ apiece.

9. Find cost of

2 hats at \$1.50 apiece.
2 spoons at \$1.25 apiece.
6 forks at \$ .75 apiece.
2 urns at \$1.20 apiece.
9 chairs at \$1.37 apiece.

1. Multiply each of the following sums of money by 5; by 4; by 3: \$39; \$1.26; \$.89; \$1.25; \$1.75.

Find value of

2.	**3.**	**4.**
\$1.61 × 6 = ?	\$2.24 × 3 = ?	\$ .36 × 18 = ?
\$ .89 × 17 = ?	\$1.39 × 7 = ?	\$1.29 × 8 = ?
\$ .37 × 19 = ?	\$1.96 × 4 = ?	\$ .87 × 11 = ?
\$ .99 × 8 = ?	\$ .86 × 12 = ?	\$1.25 × 7 = ?

5. How many pounds of sugar at 6¢ a pound can I buy for 60¢? for \$.96? for \$3.76?

6. How many apples at 2¢ apiece can I buy for \$.80? for \$4? for \$8.20?

7. How many books at 25¢ each can I buy for ½ of a dollar? for \$.75? for \$1.50? for \$6?

8. When paper is 15¢ a quire, how many quires can I buy for 45¢? for \$1½? for \$3?

How many cents or dollars and cents in each part?

9.	2) \$4	2) \$ .04	2) \$ .07
	2) \$4.04	3) \$6.03	4) \$8.08
10.	4) \$1.00	4) \$1.04	4) \$1.24
	5) \$8.25	2) \$7.16	12) \$4.08

How many times is

11.	\$.02) \$ .04	\$.02) \$ .44	\$.02) \$4.44
	\$.03) \$9.66	\$.12) \$8.40	13) \$3.90

Find the price of one of the following if

1.

a. 4 qt. of kerosene cost $ .36
b. 8 qt. of milk cost $ .40
c. 3 lb. of steak cost $ .75
d. 12 yd. of ribbon cost $ .84
e. 5 handkerchiefs cost $1.25
f. 6 pr. of shoes cost $9.60

2.

7 lb. sugar cost $ .35
13 lamp wicks cost $ .39
9 lb. of figs cost $1.08
7 pk. of apples cost $1.75
11 oz. of tacks cost $ .44
7 lb. of rice cost $ .84

3.

a. How many books @ $ .25 can be bought for $4.25?
b. How many mats @ $ .18 can be bought for $1.62?
c. How many pictures @ $ .15 can be bought for $2.85?
d. How many globes @ $ .17 can be bought for $5.10?
e. How many lb. of fish @ $ .13 can be bought for $3.51?
f. How many lb. of meat @ $ .28 can be bought for $4.48?

Find the size of the parts.

4.

$8.82 ÷ 18
$10.00 ÷ 12
$9.75 ÷ 13
$9.52 ÷ 17
$6.24 ÷ 16

How many times is

5.

$ .14 contained in $7.98?
$ .11 contained in $8.25?
$ .09 contained in $8.64?
$ .15 contained in $9.75?
$ .36 contained in $9.00?

6.

$\frac{1}{2}$ of $1 = — cents.
$\frac{1}{4}$ of $1 = — cents.
$\frac{3}{4}$ of $1 = — cents.
$\frac{1}{3}$ of $1 = — cents.
$\frac{2}{3}$ of $1 = — cents.

7.

$\frac{1}{5}$ of $1 = — cents.
$\frac{4}{5}$ of $1 = — cents.
$\frac{1}{10}$ of $1 = — cents.
$\frac{1}{8}$ of $1 = — cents.
$\frac{3}{10}$ of $1 = — cents.

1.		2.	
50 cents =	— of $1.	$12\frac{1}{2}$ cents =	— of $1.
$33\frac{1}{3}$ cents =	— of $1.	10 cents =	— of $1.
25 cents =	— of $1.	$66\frac{2}{3}$ cents =	— of $1.
20 cents =	— of $1.	5 cents =	— of $1.
75 cents =	— of $1.	4 cents =	— of $1.

3. Express the following as dollars and cents and find the sum :

$\$1\frac{3}{4}$	$\$3\frac{1}{2}$	$\$5\frac{3}{4}$	$\$90\frac{1}{10}$	$\$27\frac{1}{5}$	$\$11\frac{1}{4}$
$\$7\frac{2}{5}$	$\$9\frac{1}{10}$	$\$13\frac{1}{5}$	$\$37\frac{1}{2}$	$\$18\frac{2}{5}$	$\$43\frac{3}{5}$

4. My new Reader cost $\frac{4}{5}$ of a dollar ; my Speller $\frac{2}{5}$ of a dollar ; my Arithmetic $\frac{1}{2}$ of a dollar, and my slate $\frac{1}{8}$ of a dollar. How much did I pay for all ?

5. I have paid out to-day, 5 dimes, 2 dollars and 5 dimes, 3 dollars and a quarter, and three-quarters of a dollar. How many dollars and cents have I spent to-day ?

6. Find sum of seven dollars and three-quarters ; two dollars and one-half ; two quarters ; four dimes and five nickels.

7. How much money did a horse-car conductor receive on one trip if he took in 3 half-dollars and 4 quarters ?

8. Which would you rather have, 2 gold dollars or 7 silver quarters ?

9. A newsboy bought 75 papers for 2 ¢ apiece and sold them for 3 ¢ apiece. How much did he gain ?

10. Increase $\frac{1}{2}$ of a dollar by $\frac{3}{4}$ of a dollar and give result in dollars and cents.

1. I am thinking of a certain sum of money; take \$45 from it and there remains \$55. What is the sum of which I am thinking?

2. Find the amount of money which some boys have raised for a flag in school if they have the following subscriptions: 7¢, 1 dime, $\frac{1}{4}$ of \$1, \$.03, 2 nickels, 12¢, 3 three-cent pieces, $\frac{1}{2}$ of \$1, 4¢, and \$.08.

3. How much must the teacher give if she gives enough to make up \$2.25.

4. What will three copies of "Andersen's Fairy Tales" cost at 55¢ a copy? How many copies can be bought for \$4.95?

5. Linen is 37¢ per yd. at one store, and 40¢ at another store. How much money will you save if you buy 12 yd. and trade at the cheaper store?

6. How many qt. of chestnuts have you sold if the nuts are 6¢ per qt. and you have received \$1.08?

7. Mr. Mason worked 5 days for \$1.35 per day. How much money did he earn? How many days must he work to earn \$9.45?

8. Find the cost of 11 lb. of coffee at \$.37 per lb. and 12 lb. of tea at 63¢ per lb.

9. A man earned nine dollars fifty-eight cents during the first week of the year; seven dollars nine cents during the second week; eight dollars sixty cents during the third week; five dollars thirty cents during the fourth week. How many dollars did he earn during the first four weeks? How much more did he earn the first week than the second? How much more the second week than the fourth week?

1. Find the sum of the results in each column and express the answer as dollars and cents:

$\frac{5}{7}$ of $\begin{cases} 84¢ = \\ 63¢ = \\ 28¢ = \\ 42¢ = \end{cases}$ $\frac{4}{5}$ of $\begin{cases} 45¢ = \\ 60¢ = \\ 75¢ = \\ 25¢ = \end{cases}$ $\frac{7}{9}$ of $\begin{cases} 63¢ = \\ 99¢ = \\ 108¢ = \\ 72¢ = \end{cases}$ $\frac{3}{8}$ of $\begin{cases} 24¢ = \\ 56¢ = \\ 72¢ = \\ 96¢ = \end{cases}$

2. Ellen paid \$.65 for pins at \$.13 a paper. How many papers did she buy? How many papers can she buy for \$5.20?

3. If the expenses of 9 girls at a picnic are \$9.09, how much on an average is that apiece?

4. 3 doz. oranges cost \$.72. How much apiece?

5. 48 sheets of paper will cost how much at 18¢ a quire? What will 3 quires and 12 sheets cost?

6. How many yards of cloth @ 12¢ can be bought for \$.96? for \$4.56?

7. How many incubators @ \$16 can be bought for \$592? for \$864?

8. How many yards of ribbon @ 14¢ can be bought for 224¢? for \$3.64?

9. How many chairs @ \$16 can be bought for \$198?

10. How many books @ \$12 can be bought for \$756?

11. How many tables @ \$24 can be bought for \$960?

12. How many stoves @ \$34 can be bought for \$816?

13. How many harnesses @ \$42 can be bought for \$630?

14. By using the most convenient pieces, how will the change be counted, taking 15¢ out of \$1? 20¢ out of \$1? 45¢ out of \$1?

15. What is the cost of 300 eggs, when 8 doz. cost \$2.40?

1. Copy and fill out the following Bill of Sale:

Boston, Dec. 5, 1892.

Mr. G. A. Brown.

Bought of PIERCE & WOOD.

Nov.	*2*	*½ bu. Potatoes,*	*@ $1.50*		
"	*3*	*10 lb. Sugar,*	*@ .05*		
"	*5*	*3 lb. Cheese,*	*@ .18*		
Dec.	*1*	*1 box Raisins,*		*$1*	*75*
"	*2*	*2 lb. Mixed Coffee,*	*@ .28*		
		Rec'd Pay't,		*$*	

2. Make out a bill having same items as the above bill, with John Smith as buyer, and yourself as seller. Place to be your own town or city, and date to-day.

3. Find cost of

5 wagons @ $97
5 sleighs @ $62
4 harnesses @ $55
7 whips @ $ 1

4. Find cost of

1 doz. chairs @ $25 apiece
8 mattresses @ $43 apiece
4 lounges @ $63 apiece
1 mirror $12

5. Find cost of

5 cows @ $ 57
7 sheep @ $ 29
4 oxen @ $ 90
1 horse @ $175

6. Find cost of

4 bicycles @ $75
7 tennis suits @ $15
4 doz. balls @ $ 4 a doz.
7 doz. bats @ $ 3 a doz.

7. Write a bill of sale for each of the above exercises, using any names you choose.

1. James Robinson bought of Wm. Brown & Co., Kingston, Mass., 8 gallons of kerosene oil at 15 cents a gallon, and $3\frac{1}{2}$ bushels of corn at 70 cents a bushel. Make out a bill in full.

2. Having 1¢, 5¢, 10¢ pieces and one-dollar bills, how would you make the change for 25¢ out of $2? 96¢ out of $2? 54¢ out of $2?

3. Having quarter-dollars and 1-dollar bills, how will the change be made for $2.75 out of $5?

4. Having 1¢, 5¢, 10¢ and 25¢ pieces, how will the change be counted for 9¢ out of 50¢? 31¢ out of 50¢? 73¢ out of $1? $9.47 out of $10?

5. With quarters, 10¢ and 1¢ pieces, how will the change for 37¢ be counted out of $1? $3.75 out of $5?

6. Mr. Cole buys goods to the amount of $7.35, paying with two five-dollar bills. How will the change be made if the clerk has enough dollars, quarters and dimes?

Reckon change in each of the following cases:

7. Bought goods for $7.82, and gave $10 in payment.

8. Bought goods for $5.32, and gave $7 in payment.

9. Bought goods for $1.97, and gave $5 in payment.

10. Bought goods for $.67, and gave $\frac{3}{4}$ in payment.

11. Bought goods for $.32, and gave $\frac{1}{2}$ in payment.

12. Bought goods for $.29, and gave $\frac{3}{10}$ in payment.

13. At $2.40 a dozen, what will 8 handkerchiefs cost?

14. How many hours' work at 20¢ an hour will pay for 3 bu. potatoes at 60¢ a bushel?

15. A plumber charged $6.30 for 21 hours' work. How much did he charge an hour? How much at the same rate would he earn in a week, working 8 hours a day?

1. A boy had \$1.30, and he worked 18 hours at 12¢ an hour. He paid 80¢ for a book and \$2.50 for a tennis racket. How much money had he left?

2. A man earned \$1.50 a day, and he paid for board 60¢ a day. How much more did he earn in a week than what he paid for board?

3. How many marbles can be bought for 15 cents, at the rate of 3¢ a dozen?

4. How many dozen eggs at 18¢ a dozen will pay for 9 yards of cloth at 12¢ a yard.

5. I can buy a 100-ride railroad ticket between two towns for \$9.75. How much more than this would I have to pay for 100 rides if I bought single tickets at the rate of 16¢ apiece?

6. I buy 3 lamp-chimneys at 8¢ apiece, 4 lb. of soap at 6¢ a pound, 3 lb. of lard at 12¢ a pound, and some candles for 15 cents. What change should I receive out of a two-dollar bill?

7. $\frac{9}{10}$ of a dollar is how many more cents than $\frac{4}{5}$ of a dollar? How many more than $\frac{3}{4}$ of a dollar?

8. Do business with at least three different persons, and use no sum larger than \$10.

9. Make and perform problems about:

a. 18 water melons and 25¢. *b*. $\frac{1}{4}$ of \$2. *c*. 50¢ × 12. *d*. A boy's earnings and what he saved after spending money for two or three things. *e*. \$5 − (67¢ + 78¢). *f*. A newsboy selling papers for a week and for a month. *g*. A market, a turkey, 12½ lb., and 20¢.

SECTION V.

WEIGHTS AND MEASURES.

Oral and Written Exercises.

1. Questions on weight:

a. Weigh a pound of sand; divide it into 16 equal packages. How much does each weigh?

b. How many ounces in a pound? 2 pounds? 4 pounds?

c. Make a list of articles that are bought and sold by the pound, and give the price per pound.

d. Write the abbreviations for ounce and pound.

e. Make a pair of balances, use your pound and ounce packages for weights. Estimate the weight of packages and test by weighing packages in balances.

2. How many
oz. in 3 lb.?
oz. in $4\frac{1}{2}$ lb.?
oz. in $5\frac{1}{2}$ lb.?
oz. in $3\frac{1}{4}$ lb.?

3. How many
lb. in 32 oz.?
lb. in 48 oz.?
lb. in 56 oz.?
lb. in 36 oz.?

4. What part of a
lb. is 8 oz.?
lb. is 12 oz.?

5. What part of a
lb. is 12 oz.?
lb. is 4 oz.?

6. Change
8 oz. to lb.
4 oz. to lb.
32 oz. to lb.
64 oz. to lb.

7. Change
$\frac{1}{4}$ lb. to oz.
$\frac{1}{2}$ lb. to oz.
$\frac{3}{4}$ lb. to oz.
$4\frac{1}{2}$ lb. to oz.

1. Find the cost of a pound of candy at 2¢ an ounce.

2. What will $\frac{1}{4}$ of a pound of alum cost at $.05 an ounce? $\frac{1}{2}$ of a pound? $\frac{3}{4}$ of a pound?

3. Find the cost of $2\frac{1}{2}$ lb. of butter at 30¢ a pound.

4. How many ounce-packages of cloves can you make out of 4 pounds?

5. I have 4 lb. of sugar to put into 8 packages. How many pounds in each package? How many ounces?

6. Frances spilled $\frac{1}{4}$ of her pound-package of sugar. How many ounces remained?

7. How many ounces in 3 lb. 8 oz.? in 2 lb. 4 oz.?

8. Which would you rather have, $\frac{3}{4}$ of a pound of lozenges or 10 ounces?

9. Draw a picture of a gill, a pint, a quart and a gallon measure. These measures are used to measure what?

10. A pint is — times as large as a gill.

11. A quart is — times as large as a pint.

12. A gallon is — times as large as a quart.

13. A quart is — times as large as a gill.

14. A gallon is — times as large as a pint.

15. 1 gal. = — qt. = — pt. = — gi.

16. 1 qt. = — pt. = — gi.

17.

? gi. in 4 pt.
? pt. in 8 qt.
? qt. in 7 gal.
? pt. in 2 gal.
? gal. in 16 qt.
? qt. in 32 pt.

18.

? gi. in 2 pt. and 3 gi.
? pt. in 6 qt. and 4 pt.
? qt. in 2 gal. and 5 qt.
? gal. in 8 qt. and 8 pt.
? qt. in 12 pt.
? gal. in 12 qt. and 8 pt.

1.	2.	3.
2 gal. 2 qt.	3 qt. 1 pt.	6 pt. 3 gi.
× 4	× 4	× 8
= — gal.	= — qt.	= — pt.

4. Draw a picture of a pint, a quart, a peck, and a bushel measure. Name five things that are measured by these measures. Should this quart be larger or smaller than the liquid quart?

5.

My quart measure holds — times as much as the pint.
My peck measure holds — times as much as the quart.
My peck measure holds — times as much as the pint.
My bushel measure holds — times as much as the peck.
My bushel measure holds — times as much as the quart.
My bushel measure holds — times as much as the pint.

6. Get answers to the following at home or at the stores:

Corn costs — a bushel.
Beans cost — a bushel.
Apples cost — a bushel.
Potatoes cost — a peck.
Peanuts cost — a quart.
Berries cost — a pint.

7. Find the cost of 4 bu. of corn, 3 bu. of beans, and 2 bu. of apples.

8. Find the cost of 4 pk. of potatoes, ½ doz. qt. of peanuts, and 1 doz. qt. of berries.

9. How many times can a six-gallon pail be filled from a cask containing 120 gal? How many times can a gallon pail be filled? a quart pail?

1. A milkman brought 12 cans of milk into town; four of the cans contained 8 gal. each, five contained 4 gal. each, and the others together contained 18 gal. How many gallons of milk did he bring to town? How many quarts?

2. 10 qt. of beans are worth $1.20. What are 7 qt. worth? What are 2 pk. and 1 qt. worth?

3. A barrel contains 31½ gal., and a hogshead twice as much. How many gallons in a hogshead?

4. How many quarts in a bushel?

5. A bushel of blueberries cost $3.20. What was the price per quart?

6. How many pecks of beans in 56 qt. of beans?

7. What will 3 gal. of milk cost at 8¢ a quart?

8. To make currant jelly it takes 1 lb. of sugar to every pint of juice How many pounds of sugar will it take to 2 qt. of juice? How many pounds to 1 gal. of juice?

9. From 1 bu. of apples I sell 8 qt. How many pecks remain?

10. A grain dealer received an order for 1000 bu. of grain, but he had only 735 bu. on hand. How many bushels must he buy to fill the order?

11. From a hogshead of molasses containing 252 qt., 36 qt. were drawn out at one time and 42 qt. at another. How many quarts were drawn out and how many quarts remained? How many gallons and quarts remained?

12. How many quarts in 96 gal.? How many pints?

13. How much more milk does the milkman sell who fills 96 pint cans and 42 quart cans than the one who fills 150 pint cans?

1. A poultry dealer bought 6 bu. of corn at $1.25 per bushel, and gave in payment 12 hens worth $ .55 apiece. How much money was there due?

2. 67 pk. are how many pecks less than 900 pk.

3. 42 gal. of kerosene make one barrel. How many gallons are there in 19 barrels?

4. If one quart of kerosene is worth $ .06 what is a barrel worth?

5. At 13¢ a quart, how many quarts of beans can be bought for $7.28?

6. How many peck baskets could you fill with 64 pt. of currants? with 400 pt.?

7. How many pint dippers could you fill with 10 gal. of milk? with 48 gal.?

8. Questions on time:

a. Watch the minute hand on the dial of a watch. When it has made one revolution how much time has passed?

b. Watch the hour hand. When it has made one revolution how much time has passed?

c. How many times does the minute hand pass around while the hour hand is moving around once?

d. How many times does the hour hand pass XII in one day? How many times the minute hand?

e. Into how many parts is the small circle on the watch dial divided?

f. How long does it take the second hand to pass over one division? How many seconds in one minute?

g. How many minutes in an hour? in 2 h. 30 min.?

1. There are

a. 60 min. in — h.
b. 120 min. in — h.
c. 30 min. in — h.
d. 300 min. in — h.
e. 15 min. in — h.
f. 45 min. in — h.
g. — min. in 4 h.
h. — min. in $3\frac{1}{2}$ h.

2. There are

60 sec. in — min.
30 sec. in — min.
480 sec. in — min.
600 sec. in — min.
15 sec. in — min.
45 sec. in — min.
— sec. in 5 min.
— sec. in $4\frac{1}{2}$ min.

3. There are

a. — h. between 10 A. M. and 12 M.
b. — h. between 3 P. M. and 7 P. M.
c. — sec. between 9 A. M. and 9.15 A. M.
d. — sec. between 10.05 P. M. and 10.15 P. M.
e. — h. in 5 days; — h. in 18 days.
f. — h. in the month of September.
g. — da. in 1 yr.; — d. in 2 yr.
h. — mo. between 1880 and 1890.
i. — mo. between 1880 and 1887.
j. — wk. in 365 da.
k. — wk. between 1890 and 1893.
l. — yr. between 1800 and 1900.
m. — yr. in 1 century.

4. How many centuries since the birth of Christ?
5. How many working days in 7 wks.? 9 wks.?
6. How many days in the spring months?
7. How many days in the fall months?
8. How many days in the winter months?

1. How many more days in the summer than in the winter?

2. How many years between 1875 A. D. and 1892 A. D.

3. How many years between 30 B. C. and 1000 B. C.

4. How many less days in the months of July, August, September, and October than in the remaining months of the year?

5. A wheel turns 500 times in 5 minutes. How many times in 1 minute?

6. How many days in $\frac{1}{2}$ a year?

7. There are 24 sheets in a quire. How many sheets are there in 3 quires? in 4 quires?

8. How many sheets in $\frac{1}{2}$ of a quire? in $\frac{1}{3}$ of a quire? in $\frac{1}{4}$ of a quire?

9. How many quires in 48 sheets? in 120 sheets?

10. What will $\frac{1}{2}$ of a quire of paper cost at 1¢ a sheet? at $\frac{1}{2}$¢ a sheet?

11. There are 20 quires in a ream. How many sheets in a ream?

12. How many sheets in $\frac{1}{2}$ of a ream? in $\frac{1}{4}$ of a ream?

13. What is the cost of a ream of paper at the rate of two sheets for a cent?

14.	**15.**
4 quires cost \$.60	3 reams cost \$6.00
1 quire costs —	1 ream costs —
8 sheets cost —	4 quires cost —

16. At \$2.40 a ream, what will 10 quires of paper cost? 20 sheets? $2\frac{1}{2}$ quires?

1.	2.
12 sheets cost 6¢	¼ ream cost 80¢
½ ream cost ?	½ quire cost ?

3. How many reams in 960 sheets of paper?

4. I buy paper at $2.50 a ream and sell it at the rate of 3 sheets for 2¢. How much do I make on 2 reams?

5. Show with your hands how long, how wide, and how high a ream of letter paper is; a ream of note paper; a ream of foolscap paper.

6. A bookseller had 10 reams 12 quires of paper. How many quires had he? He sold 8 reams 4 quires. How many quires had he left?

7. Divide 27 reams 18 quires into 3 equal parts.

8. ¼ of a ream of paper is equal to how many sheets?

9. If one quire of paper costs 15¢, what will a ream cost? 8 reams and 12 quires?

10. 7 quires of paper cost —, if one quire costs 20¢.

11. A box contains 60 oranges, which are sold for 5¢ a half dozen. How much is received for all?

12. A hawk kills 5 chickens out of every score. How many are left out of 60 chickens?

13. A grocer who had 5 dozen eggs sold 15 eggs and broke 9 in handling. How many were left?

14. How many dozen in 720 eggs? 600 lemons? 840 oranges? 6 score apples?

15. Out of every dozen lemons 2 have spoiled? How many of 72 lemons are spoiled?

16. If a blackbird eats 55 worms daily, how many worms will a blackbird eat in 16 days?

1. How many pews are there in a church that seats 750 persons, 5 persons in a pew?

2. A stock farmer has 522 bushels of corn. How long will it last if he feeds 18 bushels daily?

3. A gentleman being asked his age, said that if he lived 16 years longer he should then be three score and ten years old. What was his age?

4. In a package of $3\frac{1}{2}$ quires of paper, how many sheets? It costs what at 2 sheets for a cent?

5. How many days between Washington's birthday and the Fourth of July?

6. In a block of chalk weighing 928 ounces, there are how many pounds?

7. If a newsboy saves 2 cents a day, how much money will he save in a year?

8. Board at a summer resort is $70 a mo. for two people. How much is that a week for one person? How much a day?

9. A man sold a horse for $125, which was $22 more than the horse cost him. What was the cost of the horse?

10. A salary of $960 a year is how much per month?

11. Bought a dictionary for $10 and sold it at a loss of $2.75. What was the selling price?

12. What are my expenses for the week if my daily expenses are as follows: Monday, $1.96; Tuesday, $3; Wednesday, $1.75; Thursday, $.87; Friday, $.50, and Saturday, $1.32?

13. A grocer bought two tubs of maple sugar, one weighing 30 lb. and the other 28 lb. He paid 13¢ a lb. How much did the sugar cost?

1. Fred had $10 on his birthday. He spent one dollar and seventy-five cents for a hat; two dollars and twenty-five cents for a pair of shoes; four dollars and ninety-five cents for a coat, and the remainder for pleasure. How much did he spend for pleasure?

2. Which is more expensive and how much, a trip to Boston for 3 days, costing $3.25 a day, or a trip to Wachusett for 2 days, costing $4.75 a day?

3. Suppose you are an order boy on a grocery cart. Make out a list of articles ordered by a housekeeper, give the price of each, and find the cost.

4. Make out a list of presents which you would like to give away Christmas and the price of each. From this make and perform one or more problems.

5. Find how many columns of 10 numbers of two figures each you can add in 12 minutes, and then ask how many columns you can add in 60 m., 12 m., etc.

6. If a boy sells 96 papers in a week of 6 days, how many papers a day on the average does he sell?

7. In a — a boy gathers — bu. of apples. How many bushels does he average a day?

8. Make and perform problems about:

a. — lb. of tea and — lb. of sugar.

b. A five-dollar bill and — gal. of molasses.

c. Buying cloth and paying in eggs at — a doz.

d. The number of hours you are in school in a month and in a year.

e. 32 qt. and 19 bu.

f. 20 qt. and 12 gal.

g. A gill cup and a gallon measure.

SECTION VI.

MEASUREMENTS.

Oral and Written Exercises.

1. Questions on distance:

a. What object in your school-room is 1 yard long? 1 foot long? 1 inch long? How many inches in a foot? feet in a yard? How many feet long is your school-room?

b. Make a rod measure with a string, tying knots to indicate feet and yards. How many yards in a rod? How many feet in a rod?

c. Walk one rod. How many of your steps make a rod? How many rods in 100 steps?

d. Name two objects in the room one rod apart.

e. How many rods long is your play-ground?

f. Find some distance 3 rods long; 7 rods long; 10 rods long; 30 rods long; 50 rods long.

g. How many rods do you walk when you come directly to school in the morning?

h. What building or street is 1 mile from your school-house? 2 miles? 4 miles?

i. How long does it take you to walk a mile?

j. How many rods are there in a mile? (Find out by counting your steps.)

k. What abbreviations stand for inch, foot, yard, rod, mile?

l. Write in full the table of long measure.

1. How many

a.	in. in 1 ft. ?	4 ft. ?	3 ft. ?
b.	ft. in 1 yd.?	2 yd.?	5 yd.?
c.	in. in 1 yd.?	2 yd.?	3 yd.?
d.	ft. in 12 in. ?	36 in. ?	60 in. ?
e.	yd. in 3 ft. ?	6 ft. ?	12 ft. ?
f.	yd. in 36 in. ?	72 in. ?	108 in. ?
g.	yd. in 1 rd.?	2 rd. ?	4 rd.?
h.	ft. in 1 rd.?	2 rd. ?	4 rd.?
i.	rd. in 1 mi.?	2 mi.?	3 mi.?
j.	rd. in $\frac{1}{2}$ mi.?	$\frac{1}{4}$ mi.?	$\frac{1}{8}$ mi.?

2. From here to — is $\frac{1}{2}$ of a mile, or — rd.

3. From here to — is $\frac{1}{4}$ of a mile, or — rd.

4. From here to — is $\frac{1}{8}$ of a mile, or — rd.

5.	**6.**
There are — in. in $\frac{1}{2}$ yd.	18 in. is — of a yd.
There are — in. in $\frac{1}{4}$ yd.	9 in. is — of a yd.
There are — in. in $\frac{3}{4}$ yd.	27 in. is — of a yd.

7. How many yards long is a piece of wire that measures 72 in. ? 288 in. ?

8. I wish to buy 45 in. of silk cord. How many yards shall I ask for ?

9. How many yards long is a mat that measures 90 in ?

10. I cut 12 in. off a piece of silver paper 3 ft. long. How long is the piece left ?

11. A strip of oil-cloth is 3 ft. 8 in. long. How many inches long is it ?

1. The red-winged blackbird is $9\frac{1}{2}$ in. long. How many inches less than a foot does it measure?

2. A lady buys a piece of silk velvet 72 in. long at \$9 per yd. How much does it cost?

3. How many rods in 3 miles?

4. It is 4 rd. from my barn to my house. How many feet long must a wire be that reaches from one to the other? Cost of wire at 8¢ a yard?

5. What is the cost of 3 yd. 2 ft. of wire at 2¢ per ft.?

6. How much longer is 7 yd. 5 ft. than 4 yd. 2 ft.?

7. In 948 in. there are how many feet?

8. Draw a picture of a field 40 rd. long and 10 rd. wide. How many rods of fence will it take to go around it?

9. If you have 780 in. of wire, into how many foot pieces can you cut it?

10. My screen door is 2 yd. 10 in. long. How many inches long is it?

11. How many feet of wire fencing will it take to reach around my flower garden 8 yd. by 3 yd?

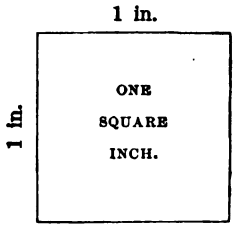
12. How many feet long is a roll of carpeting that measures 127 yd.?

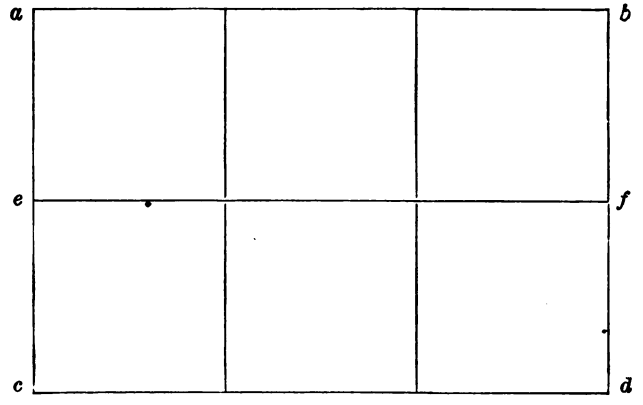
13. What will 10 yd. of ribbon cost at 32¢ per yd. and 12 yd. of muslin at 23¢ per yd.?

14. How much longer is the Columbia River than the Connecticut, if the former is 1000 miles long and the latter 350 miles long?

15. A stage-coach runs 48 mi. in 6 h. How many miles does it run an hour? How far will it run in 20 h.?

16. The pine tree near my house measures 75 ft. and the birch tree 34 ft. What is the difference in height?

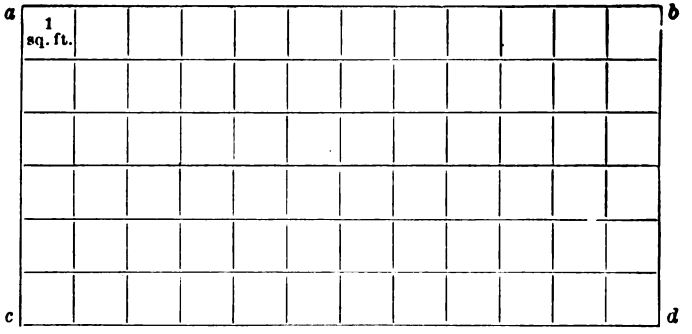




Sq. in. stands for square inch or square inches.

1. In the above rectangle, *a b c d*, how many squares in a row? How many squares in two rows? How large is each square? How many sq. in. in the rectangle? In one row there are — sq. in.; in two rows there are two times — sq. in. Two times — sq. in. are — sq. in.

2. Draw a rectangle 4 in. long and 3 in. wide. In this rectangle there are — sq. in. in one row; in — rows there are — times — sq. in. — times — sq. in. are — sq. in.



1. In the above rectangle, *a b c d*, ¼ in., represents 1 ft. How many feet long and wide is the rectangle? One of the little squares is called a square foot, because it is how long and wide? How many square feet in one row? How many rows are there? How many square feet in the rectangle?

2. How many square inches in this page?

3. How many square inches in the top of your desk?

4. How many square feet in floor of your school-room?

5. How many square inches in a pane of one of the school-room windows? How many square inches in all the window panes of your school-room?

6. How many square feet in one of the walls of your school-room?

7. How many square feet of black-board surface in your school-room?

8. I have a rectangular piece of land 150 ft. long and 50 ft. wide. How much is it worth at 10¢ a square foot? (Draw plan by a scale 50 ft. to an inch.)

9. How many square inches in 1 sq. ft.? (Draw plan.)

1. What is the cost of a marble slab 3 ft. by 2 ft. at $2.50 a sq. ft.?

2. How many square feet of oil-cloth will cover a floor 16 ft. by 12 ft.?

3. How many square feet of carpeting will it take to cover a floor 27 ft. by 18 ft.?

4. At $.04 a square yard how much will it cost to have a ceiling kalsomined which is 9 yd. by 7 yd.?

5. What will the laying of a flag-stone walk 10 ft. by 4 ft. cost at 19¢ a sq. ft.?

6. How many rods of fence will it take to enclose a field 90 rods long and 67 rods wide?

7. How many blocks of marble each one foot square will it take to pave a passage-way 10 ft. by 12 ft.?

8. I have a flower garden 48 ft. long and $\frac{1}{4}$ as wide. How many square feet does it contain?

9. Find the area of all the faces of a common brick.

10. How many feet of moulding will be required for a box 4 ft. by 3 ft.?

11. How many times will a cart-wheel 1 rd. in circumference turn round in going a mile?

12. How far will you walk in going 4 times around a square 80 rd. long?

13. Make and perform problems about:

a. The number of paces between your school-house and —, and the distance in feet.

b. Your height and the height of some one else.

c. The size of your room at home.

d. The size of your school-room.

e. A garden, and its size.

SECTION VII.

NUMBERS TO 1,000,000.

1. Count by 1000's to 20,000 and write the numbers as you count.

2. Count by 100's from 1000 to 10,000 and write the numbers as you count.

3. How many thousands, and hundreds in

1,100	1,300	1,800	2,600	3,500
7,800	6,500	9,800	5,500	4,400

4. How many thousands, hundreds, and tens in

1,250	1,780	2,640	5,440	6,830
7,140	8,310	9,630	7,860	8,660

5. How many thousands in

10,000	12,000	28,000	48,000	85,000
164,000	182,000	384,000	763,000	840,000

6. How many thousands, hundreds, tens, and units in the following numbers?

1,643	7,084	8,090	7,008	8,069
10,656	18,074	20,084	34,006	40,006

7. Read the following numbers:

8,643	4,686	7,860	8,306	7,900	7,064	8,006
9,001	10,642	12,064	10,039	18,004	20,014	30,004

1. Write in figures: Eight hundred forty; nine hundred six; one thousand seven hundred thirty-two; one thousand eight hundred six; one thousand forty-nine; one thousand four; ten thousand four hundred sixty-five; ten thousand eight hundred seven; ten thousand forty eight; eighteen thousand nine; twenty thousand seventy.

2. Write in figures: Seventeen thousand forty-six; nineteen thousand seven; twenty thousand six hundred seventy; thirty thousand ninety; forty-four thousand forty; forty-eight thousand one; seventy thousand fourteen; seventy thousand seventy; eighty thousand eighty; eighty thousand eight.

3. Write in figures: Six thousands, no hundreds, five tens, seven ones; eight thousands, two hundreds, no tens, no ones; four hundred-thousands, two ten-thousands, six thousands. How may the preceding numbers be read more briefly?

4. Write in figures: One million six hundred fifty-four thousand nine hundred eighty-seven. What is the name of the first group? of the second group? of the third group?

5. Express by words:

6,014	19,040	902,105	876,543
90,209	300,070	530,100	404,040

6. Express by figures in columns: Eight hundred one thousand four; two hundred thousand six hundred forty; four thousand fifty-six

1. Express in figures: Five thousand four hundred sixty-eight; ten thousand seven hundred seventy-five; seven hundred thousand seventy-four; fifty thousand twenty; eighty thousand fifty; seven hundred ten thousand; five hundred forty thousand seventy-two; one thousand nine hundred three; nine hundred fifty-seven thousand five hundred three; one thousand ten; one hundred thousand one hundred.

2. Express by words:

2,561 50,041 700,044 629,005

3. Tell what each figure of the numbers in No. 2 stands for.

4. Write in Roman notation: One hundred sixty; eight hundred forty-nine; seven hundred ninety; nine hundred four; seven hundred seventy-four; six hundred sixty; four hundred forty-four; one thousand four hundred; eighteen hundred ninety-four; eighteen hundred-sixty-one; fourteen hundred ninety-two.

5. Write in Roman notation numbers given in Exercise 1.

6.	**7.**	**8.**
1,000 + 1,000	9,000 − 2,000	10,000 + 10,000
2,000 + 1,000	8,000 − 5,000	30,000 + 10,000
3,000 + 3,000	6,000 − 4,000	60,000 + 10,000
5,000 + 2,000	3,000 − 1,000	90,000 + 10,000
7,000 + 1,000	7,000 − 4,000	70,000 + 50,000
3,000 + 4,000	5,000 − 4,000	90,000 + 30,000

1.	2.	3.
3,000 + 1,400	40,000 + 26,000	110,000 + 200,000
2,000 + 2,300	52,000 + 40,000	613,000 + 300,000
4,000 + 3,500	71,000 + 20,000	427,000 + 103,000
5,200 − 3,000	82,000 − 50,000	800,000 − 799,000
2,000 − 1,600	76,000 − 21,000	716,000 − 500,000
3,400 − 1,000	35,000 − 15,000	482,000 − 380,000

$3{,}569 = 3{,}000 + 500 + 60 + 9$

4.	5.	6.
2,635 =	24,731 =	187,296 =
9,096 =	65,492 =	384,900 =
4,607 =	87,460 =	795,283 =
5,103 =	56,270 =	986,295 =

$3{,}000 + 500 + 20 + 3 = 3{,}523$

7.	8.
4,000 + 600 + 50 + 7 =	50,000 + 4,000 + 200 + 50 + 7 =
2,000 + 60 + 400 + 3 =	70,000 + 4,000 + 2 =
1,000 + 5 + 40 + 200 =	40,000 + 8,000 + 300 + 8 =
6,000 + 700 + 10 =	80,000 + 9 =

Add:

9.	10.	11.	12.	13.	14.
4,216	6,327	8,481	3,619	5,908	8,069
3,487	8,717	9,307	7,506	7,980	9,985

15.	16.	17.	18.	19.	20.
8,914	5,967	2,709	4,009	8,009	2,345
4,375	8,984	6,870	3,818	8,408	6,789
6,800	**6,007**	**7,408**	**5,760**	**8,877**	**2,762**

Add:

1.	2.	3.	4.	5.	6.
6,248	415	7,805	342	1,643	8
3,141	8,824	7,209	164	2,477	326
895	1,308	811	4	864	8,972
73	1,608	983	827	28	586
56	729	26	9,256	2,987	982
8	2,865	2,544	3,981	4	4,876

7.	8.	9.	10.	11.
23,475	15,605	36,480	68,425	47,084
61,839	24,309	15,374	387	3,786
61,748	36,180	2,648	4,564	785
86,207	17,439	375	37,605	65

12.	13.	14.	15.
425,286	245,364	782,386	762,381
249,387	487,965	102,384	2,896

How many are

16. 8652 + 34,396 + 248 + 6 + 24,386?
17. 64,387 + 865 + 23 + 2861 + 49?
18. 56,397 + 23 + 9762 + 89,631?
19. 2438 + 89 + 67 + 324 + 8621 + 3864?
20. 5683 + 8926 + 562 + 37 + 834?

21. Add: four thousand two hundred thirteen, one hundred forty-five, five thousand two hundred.

22. Add: three thousand one hundred forty, one thousand two hundred five, four thousand three hundred thirty-two, two thousand eleven.

1. Add: one hundred twenty-five thousand six hundred, eighty-five thousand six hundred thirty-eight, seven thousand two hundred fifty-seven.

2. Add: five thousand two hundred forty-one, seventy-eight, four thousand eight hundred thirty-six, nine hundred twenty-nine.

3. Add by columns and by lines:

	a.	*b.*	*c.*	*d.*	*e.*	*f.*	*g.*
h.	347	4032	986	5901	6908	309	7001
i.	2764	3281	9276	5987	860	9408	3786
j.	296	42	1087	301	7865	396	4807
k.	29	862	9263	876	807	5035	384
l.	8421	7263	908	204	1063	870	72
m.	876	924	209	1862	8306	4027	6098

4. What is the sum of 3241, 476, 84,324, 8472?

5. From 3469 take 1150, 270, 1500.

6.	7.	8.	9.	10.
5,678	3,645	2,345	9,076	8,276
− 4,300	− 1,324	− 1,298	− 1,334	− 1,334

11. From 4670 take 2380, 1426, 3190, 2740.

12. From 5600 take 2350, 3427, 1840, 2364.

In each column of table find the difference between:

13. *h* and *i*. 14. *i* and *j*. 15. *j* and *k*. 16. *k* and *l*.

In each line of table find the difference between:

17. *a* and *b*. 18. *b* and *c*. 19. *c* and *d*. 20. *d* and *e*.

1.	2.	3.	4.	5.
4,265	8,086	4,572	3,456	4,536
− 2,583	− 2,743	− 3,920	− 2,814	− 3,932

6.	7.	8.	9.	10.
4,350	7,864	9,653	8,767	9,000
− 1,086	− 2,487	− 2,576	− 2,369	− 8,765

11.	12.	13.	14.	15.
6,405	7,035	8,405	5,031	6,040
− 3,168	− 4,682	− 6,087	− 2,870	− 375

16.	17.	18.	19.	20.
8,004	6,002	7,005	2,007	9,004
− 2,345	− 5,708	− 2,346	− 1,038	− 555

21.	22.	23.	24.
23,456	36,998	50,684	56,879
− 12,000	− 24,876	− 23,876	− 28,340

25.	26.	27.	28.
56,878	34,682	80,007	70,006
− 32,879	− 28,094	− 56,832	− 66,827

29.	30.	31.	32.
287,365	508,327	876,581	976,527
− 100,321	− 234,621	− 783,240	− 387,647

33.	34.	35.	36.
763,287	390,007	870,007	283,651
− 587,658	− 87,650	− 568,762	− 107,065

	1.	2.	3.
a.	360 – 27	490 – 352	3680 – 1235
b.	5360 – 5147	7130 – 4128	3604 – 3352
c.	6407 – 6382	7109 – 7084	9087 – 2735
d.	3981 – 2756	5372 – 5128	6416 – 6109
e.	5376 – 5184	8598 – 7865	7460 – 7374
f.	7653 – 6780	6266 – 3679	7473 – 6894
g.	7800 – 1234	4600 – 3284	5800 – 5786
h.	3700 – 3608	4500 – 4409	8006 – 7454
i.	9007 – 3732	6009 – 5080	6000 – 3761
j.	8000 – 5431	7000 – 6391	3004 – 1678
k.	5030 – 4364	6071 – 5894	7001 – 6789

4. The minuend is 90,000 and the subtrahend 8792. What is the remainder?

5. The minuend is 87,643 and the remainder 62,487. What is the subtrahend?

6. The subtrahend is 7651, the remainder 341. Find the minuend.

7. What number is that to which if 876 be added the result will be 9801?

8. From 87,610 take 9999.

9. Take 7684 from 100,000.

Add columns, and prove by subtraction:

10.	11.	12.	13.
2123	2364	7025	428
6354	2559	843	1125
698	1994	1427	2496
1927	49	7917	6579

1. Add by columns and by lines:

	f.	*g.*	*h.*	*i.*	*j.*
a.	9876	7810	5301	2389	107
b.	5802	687	398	279	87
c.	8031	5862	4320	1897	209
d.	9805	6297	3274	2891	590
e.	4620	1028	987	642	589

In each column find the difference between:

2. *a* and *b*. **3.** *b* and *c*. **4.** *c* and *d*. **5.** *d* and *e*.

In each line find the difference between:

6. *f* and *g*. **7.** *g* and *h*. **8.** *h* and *i*. **9.** *i* and *j*.

10. The diameter of the earth is 7918 miles; of Mercury, 3000 miles; of Venus, 7630 miles; and of Mars, 5000 miles. What can you say of the difference in diameter of these planets?

11. The population of Washington, D. C., in 1880 was 177,624; in 1890 it was 230,392. What was the increase during ten years?

12. The population of Cleveland in 1890 was 261,353; that of St. Louis, 451,770. What was the difference? How many more inhabitants had Cleveland than Washington in 1890?

13. The number of immigrants into the United States in 1877 was 141,857; in 1878, 138,469; in 1879, 177,826; in 1892, 623,084. How did the immigration of 1877, 1878, 1879 compare with that of 1892?

Oral Work.

	a.	*b.*	*c.*	*d.*	*e.*	
1.	6	60	600	6,000	60,000	× 2
2.	12	120	1,200	12,000	120,000	× 3
3.	16	160	1,600	16,000	160,000	× 4
4.	25	250	2,500	25,000	250,000	× 4

	a.	*b.*	*c.*	*d.*	
5.	132	1,320	13,200	132,000	× 3
6.	153	1,530	15,300	153,000	× 2
7.	121	1,210	12,100	121,000	× 6
8.	111	1,110	11,100	111,000	× 8

	9.	**10.**	**11.**	**12.**
a.	110 × 1	110 × 2	110 × 3	110 × 4
b.	120 × 1	120 × 2	120 × 3	120 × 4
c.	130 × 1	130 × 10	140 × 1	140 × 10
d.	150 × 1	150 × 10	160 × 1	160 × 10
e.	200 × 1	200 × 10	300 × 1	300 × 10
f.	246 × 1	246 × 10	387 × 1	387 × 10
g.	1021 × 1	1021 × 10	3821 × 1	3821 × 10

	13.	**14.**	**15.**
a.	160 × 2	140 × 3	120 × 80
b.	160 × 20	140 × 30	110 × 90
c.	150 × 4	200 × 5	130 × 50
d.	150 × 40	200 × 50	240 × 20
e.	250 × 3	110 × 7	150 × 50
f.	250 × 30	110 × 70	160 × 60
g.	180 × 50	240 × 60	360 × 70

Written Work.

1.	2.	3.	4.	5.
386 × 9	1,386 × 9	2,876 × 7	12,856 × 8	90,762 × 9
6.	**7.**	**8.**	**9.**	**10.**
2,371 × 12	13,582 × 6	13,506 × 7	14,026 × 8	83,706 × 9
11.	**12.**	**13.**	**14.**	**15.**
3,128 × 12	5,912 × 14	6,048 × 17	3,582 × 16	2,380 × 18
16.	**17.**	**18.**	**19.**	**20.**
3,498 × 13	1,858 × 15	6,696 × 19	3,054 × 13	2,968 × 15

21.	22.	23.	24.	25.	26.
483 × 24	759 × 25	665 × 27	534 × 32	498 × 29	751 × 33
27.	**28.**	**29.**	**30.**	**31.**	**32.**
706 × 38	709 × 52	245 × 45	698 × 37	596 × 82	737 × 38
33.	**34.**	**35.**	**36.**	**37.**	**38.**
613 × 57	533 × 63	828 × 67	261 × 84	695 × 96	785 × 59
39.	**40.**	**41.**	**42.**	**43.**	**44.**
384 × 99	855 × 78	564 × 87	403 × 58	807 × 95	704 × 98

Multiply:

1. 68 by 70	**4.** 965 by 90	**7.** 1297 by 40
2. 107 by 20	**5.** 386 by 50	**8.** 1006 by 80
3. 750 by 40	**6.** 499 by 60	**9.** 1070 by 30

10. Find cost of 37 sofas at $27.25 each.

11. Find cost of 83 acres of land at $50.50 an acre.

12. Find cost of 504 pecks of apples at $ .17 a peck.

13. Find cost of 3 doz. chairs at $38.96 each.

14. Find cost of 4 quires of paper at $ .03 a sheet.

15. Find cost of 15 pianos at $600.75 each.

Fill out the following blanks and find the cost:

16. 38 — @ $25.87.	**20.** 920 — @ 55¢.
17. 90 — @ $50.75.	**21.** 386 — @ 24¢.
18. 48 — @ $86.42.	**22.** 807 — @ 17¢.
19. 78 — @ $76.73.	**23.** 326 — @ 15¢.

24. Multiply each of the following numbers by (*a*) 87, (*b*) 38, (*c*) 96, (*d*) 45, (*e*) 69, (*f*) 74, (*g*) 59:

$56.20	$93.46	$65.38
$83.05	$86.25	$72.25
$75.58	$80.32	$70.03

25. If one silver spoon costs $4.75, what will 4 doz. cost?

26. If one car-load of corn is worth $480, what is the value of a train of 22 cars filled with corn?

27. In 1892 there were 2,139 officers and 24,710 enlisted men in the United States army. At $16 apiece for officers and $8 apiece for enlisted men, what would their clothing cost for a year?

Oral Work.

	a.	*b.*	*c.*	*d.*	*e.*	
1.	40	400	4,000	40,000	44,000	÷ 2
2.	60	600	6,000	60,000	69,000	÷ 3
3.	80	800	8,800	88,000	88,800	÷ 4
4.	69	690	6,900	69,000	96,000	÷ 3
5.	505	5,050	50,500	55,000	55,500	÷ 5
6.	124	1,240	12,400	12,480	10,620	÷ 2
7.	240	2,406	24,060	24,066	42,060	÷ 6
8.	350	3,507	35,070	35,077	49,707	÷ 7
9.	639	6,309	63,090	63,009	81,909	÷ 9

10.	**11.**	**12.**	**13.**
40 ÷ 20	60 ÷ 30	120 ÷ 40	75 ÷ 5
400 ÷ 20	600 ÷ 30	1,200 ÷ 40	750 ÷ 50
4,000 ÷ 20	6,000 ÷ 30	12,000 ÷ 40	7,500 ÷ 50
40,000 ÷ 20	60,000 ÷ 30	120,000 ÷ 40	75,000 ÷ 50

	a.	*b.*	*c.*	*d.*	*e.*	
14.	48	480	4,800	48,000	48,160	÷ 16
15.	72	720	7,200	72,000	72,240	÷ 24
16.	75	750	7,500	75,000	75,150	÷ 15
17.	84	840	8,400	84,000	84,420	÷ 42

Do the following examples orally, and then test by written work:

18.	1,446 ÷ 6	**22.**	2,480 ÷ 8	**26.**	4,200 ÷ 7
19.	14,406 ÷ 6	**23.**	2,560 ÷ 8	**27.**	43,400 ÷ 7
20.	14,460 ÷ 6	**24.**	26,400 ÷ 8	**28.**	55,300 ÷ 7
21.	25,200 ÷ 6	**25.**	48,160 ÷ 8	**29.**	55,370 ÷ 7

Written Work.

How many times

	4 in		5 in		7 in		8 in
1.	3,484	**7.**	6,495	**13.**	17,564	**19.**	65,608
2.	5,656	**8.**	16,380	**14.**	24,262	**20.**	72,816
3.	6,372	**9.**	72,605	**15.**	8,582	**21.**	99,512
4.	9,388	**10.**	87,300	**16.**	96,607	**22.**	39,624
5.	7,928	**11.**	22,905	**17.**	87,934	**23.**	46,400
6.	2,824	**12.**	33,545	**18.**	2,216	**24.**	64,784

25.	$5{,}796 \div 21$	**31.**	$21{,}364 \div 28$	**37.**	$47{,}360 \div 42$
26.	$19{,}880 \div 35$	**32.**	$3{,}402 \div 63$	**38.**	$21{,}456 \div 31$
27.	$9{,}576 \div 28$	**33.**	$3{,}402 \div 54$	**39.**	$13{,}750 \div 29$
28.	$7{,}740 \div 45$	**34.**	$1{,}961 \div 48$	**40.**	$83{,}740 \div 18$
29.	$4{,}704 \div 42$	**35.**	$12{,}345 \div 24$	**41.**	$50{,}372 \div 38$
30.	$18{,}576 \div 72$	**36.**	$38{,}107 \div 36$	**42.**	$45{,}039 \div 57$

	Dividend.	Divisor.	Quotient.		Dividend.	Divisor.	Quotient.
43.	3,540	60	—	**56.**	8,639	53	—
44.	6,160	70	—	**57.**	6,035	58	—
45.	4,270	70	—	**58.**	27,321	24	—
46.	2,250	90	—	**59.**	31,406	34	—
47.	8,070	40	—	**60.**	20,798	29	—
48.	5,760	50	—	**61.**	54,394	43	—
49.	6,783	80	—	**62.**	40,095	38	—
50.	78,351	20	—	**63.**	4,104	—	152
51.	46,228	30	—	**64.**	73,792	32	—
52.	98,765	80	—	**65.**	43,056	—	897
53.	34,541	70	—	**66.**	33,316	—	374
54.	39,986	50	—	**67.**	60,803	85	—
55.	62,434	90	—	**68.**	30,097	48	—

Drill Work. (Prove.)

1. Dividend 694,830; quotient 69. Required divisor.
2. Dividend 365,400; quotient 57. Required divisor.
3. Dividend 7,937; quotient 47. Required divisor.
4. Dividend 296,725; quotient 98. Required divisor.
5. Dividend 321,485; quotient 98. Required divisor.
6. Product 496,068; multiplier 86. Req. multiplicand.
7. Product 12,345; multiplier 83. Req. multiplicand.
8. Product 78,560; multiplier 64. Req. multiplicand.
9. Product 937,865; multiplier 49. Req. multiplicand.
10. Divide 15,450 by 15. Proof is 15 times — = 15,450.
11. Divide 64,128 by 32. Proof is 32 times — = 64,128.
12. Divide 25,380 by 54. Proof is 54 times — = 25,380.
13. Divide 84,140 by 28. Proof is 28 times — = 84,140.
14. Divide 75,576 by 47. Proof is 47 times — = 75,576.
15. Divide 70,380 by 69. Proof is 69 times — = 70,380.

	Dividend.	Divisor.	Quotient.	Remainder.
16.	7,018	38	184	—
17.	25,409	69	—	17
18.	23,146	84	—	46
19.	28,700	59	486	—
20.	70,860	65	—	—

How many are

21. $\frac{5}{9}$ of 23,454
22. $\frac{3}{7}$ of 90,734
23. $\frac{4}{5}$ of 35,855
24. $\frac{4}{9}$ of 369,801
25. $\frac{2}{11}$ of 120,087
26. $\frac{4}{5}$ of 18,365
27. $\frac{2}{7}$ of 31,738
28. $\frac{9}{10}$ of 7,680
29. $\frac{3}{7}$ of 4,011
30. $\frac{5}{9}$ of 4,392
31. $\frac{2}{3}$ of 4,920
32. $\frac{5}{6}$ of 12,594
33. $\frac{4}{5}$ of 13,845
34. $\frac{7}{12}$ of 98,796
35. $\frac{2}{10}$ of 87,630

How many times is

1. \$34) \$32572	**2.** \$63) \$93840	**3.** \$29) \$352417
4. \$82) \$89634	**5.** \$.36) \$117.98	**6.** \$.48) \$1666.56
7. \$.89) \$9078.00	**8.** \$1.62) \$110.16	**9.** \$3.84) \$481.20

Find price of one when

10. 95 bu. of wheat cost \$74.10.
11. 35 T. of hay cost \$472.50.
12. 76 bu. of oats cost \$37.28.
13. 25 horses cost \$3134.25.
14. 19 cows cost \$869.25.
15. 98 machines cost \$3456.46.

How many can be bought if

16. 1 yard of carpeting costs \$.79 and whole number of yards cost \$82.95?

17. 1 acre of land costs \$97 and whole number of acres cost \$133,472?

18. 1 pair of slippers costs \$.95 and whole number of pairs cost \$795.85?

19. 1 quire of paper costs \$.39 and whole number of quires cost \$349.83?

20. A ton of coal weighs 20 times as much as a boy who weighs 100 lb. How many pounds in a ton? 100 lb. is called a hundredweight. How many hundredweight in one ton.

1 ton (T.) = — lb.
1 ton = — hundredweight (cwt.)

1. Make a list of things that are sold by the ton.

2. How many tons in 4000 lb.? in 8000 lb.? in 40 cwt.? in 80 cwt.?

3. How many hundredweight in 3 T.? in 600 lb.? in $\frac{1}{2}$ T.? in 1000 lb.?

4. How many

lb. in $1\frac{1}{4}$ T.?
lb. in $4\frac{1}{2}$ T.?
oz. in $\frac{1}{2}$ T.?
oz. in $\frac{3}{4}$ cwt.?

5. How many

T. in 12,000 lb.?
T. in 8,500 lb.?
cwt. in $6\frac{1}{2}$ T.?
cwt. in 1,650 lb.?

6. What must I pay for 1000 lb. of coal at $6.50 a ton? How much for 6 T. 5 cwt.?

7. If it takes 100 lb. of nails to fill a keg how many kegs must I have to carry a ton of nails?

8. If in January I find I have burned one-half of my winter's supply of coal, and still have 70,000 lb., how many tons did I buy for the winter?

9. A manufacturer put 3 T. of saleratus in pound packages. How many packages did he put up?

10. What is the cost of 15 T. of hay at $14.75 a ton?

11. Find the cost of 1 T. of coal when 18 T. cost $121.50.

Add:

12.

T.	lb.	oz.
9	12	7
4	2	3

13.

T.	lb.	oz.
15	8	4
2	1	7

Add :

1.

lb.	oz.
6	8
3	8

2.

lb.	oz.
4	8
2	9

3.

lb.	oz.
5	9
4	12

4.

T.	lb.
4	600
3	1400

5.

T.	lb.
5	600
4	1500

6.

T.	cwt.
8	8
6	12

7. The dividend is thirty-eight thousand one hundred seven and the divisor thirty-six. What is the quotient?

8. If a man on horseback rides 48 miles each day, how much will he lack of 2000 miles in 23 days?

9. Find the sum of 146,831 and 208,765, and from the sum take their difference.

10. The salary of the President of the United States is $50,000 a year. How much is that a month?

11. In 1890, Boston had 448,477 inhabitants, and Brooklyn had 806,343 inhabitants. How many more people were there in Brooklyn than in Boston?

12. Mt. Greylock, 3500 ft.; Mt. Tom, 1214 ft.; Mt. Wachusett, 2000 ft.; Mt. Everett, 2634 ft.; Mt. Holyoke, 1200 ft.; Blue Hills, 835 ft. Find the combined height of the six highest peaks in Massachusetts. Find the difference in height of every two of these peaks.

13. There are 5280 ft. in a mile. How many feet less than a mile is Mt. Wachusett?

14. Suppose the six highest peaks in Massachusetts were piled one on top of the other, would they be more or less than two miles, and how much?

1. I paid $2400 for my farm, $155.75 for a horse, $26 for a cart, $86.50 for a mowing-machine, $10¼ for a horse-rake, $45½ for a cow. What did I pay for all?

2. Change 12,867¢, 97,658¢, 40,000¢, 87,658¢, 300¢, 97,658¢, 287¢ to dollars and cents, and find the sum.

3. How much must I pay for 27 fowls at $1.25 apiece, and 512 lbs. of pork at $.12 per lb.?

4. What will be the cost of supplying a school building with furniture, if each desk costs $5.67, and there are to be placed 36 desks in one room, 42 in another, and 27 in another?

5. There were sold in one week 8856 sheep at $5.25 per head. What did they bring?

6. Sold 196 beeves, averaging 825 lbs., at 7¢ per lb. How much was received for them?

7. If I take 6843 gallons from 19,087 twice, what will remain?

8. How many feet of fencing will be required to inclose a lot of land measuring 568 ft. on two sides and 879 ft. on the two other sides?

9. How many years will it take a man to save $1944 if he saves $27 a month?

10. If a ship sails 4800 miles in 25 days, what is her daily rate of speed?

11. A business man put in the bank at one time $785.55 and $987.75. During one week he drew out $87.59, $48.75, and $84. What was the balance in the bank?

12. Mrs. Smith pays her seamstress $4.50 a week. How much money does the seamstress receive in a year?

1. Find one-fifteenth of $8793.87.

2. The fare from — to Boston is $6.25. What does the railroad company receive from a train of 8 cars if there are 35 through passengers in each car?

3. A farmer made 3444 gallons of cider, which he put into casks holding 41 gallons each. How many full casks had he?

4. How many bars of iron weighing 56 lb. each can be made from 20,000 lb. of iron?

5. At the Lowell mills 16,415 yd. of carpeting were woven in 67 days. What was the average number of yards woven daily?

6. $527 \times 55 \times 9 - 253{,}974 = 3$ times how many?

7. Four men buy a lot of land for $7000, and build a store upon it at a cost of $8365. How many dollars does each man pay?

8. In June a dairyman made 355 pounds of butter, in July 286 pounds, in August 387 pounds, and in September 412 pounds. He packed it in tubs of 30 pounds each. How many tubs did he fill?

9. Make and perform problems about:

a. When America was discovered, and when the Pilgrims landed at Plymouth.

b. The number of months since the end of three wars in which the United States was involved.

c. The number of days or hours it would take to count a million.

d. Buying wheat and paying in sugar.

e. Buying ice and paying in cotton.

f. The amount of coal a family burns, and cost.

SECTION VIII.

MISCELLANEOUS.

Oral and Written Exercises.

1. If 3 lb. of coffee cost 60¢, what cost ¾ of a pound?

2. How many spools of cotton at 5¢ a spool can be bought for a dollar and a half?

3. If 3 pints of milk are used in a family every day, how many quarts will be used in two weeks?

4. A bushel of nuts was sold for 5¢ a quart. How much money did it bring?

5. If a horse eats 4 quarts of oats a day, how long will half a bushel last him?

6. A man bought a dozen peaches at the rate of 2 for 3 cents. What did they cost?

7. At the rate of 20 lb. for a dollar, what will 8 lb. of sugar cost? 25 lb.? 100 lb.?

8. If you pay $.25 for a dozen oranges, and sell them at 4 cents apiece, how much do you gain?

9. What will you pay for half a peck of potatoes at the rate of $.80 a bushel?

10. How many hours are there in a week?

11. How many weeks are there in three years?

12. A man uses 3 oz. of coffee a day. How many pounds and ounces does he use in a week?

13. I buy 6 lb. of meat at 12½¢ a pound, and give a one-dollar bill. What change should I receive?

1. How many ten-cent pieces can you get for $5?

2. A farmer bought 12 yards of cloth at $3 a yard, and paid for it in hay at $12 a ton. How many tons did it take?

3. If eggs are worth 20¢ a dozen, and butter 30¢ a pound, how many eggs are worth 4 pounds of butter?

4. How many weeks and days are there in the month of August? in November? in February?

5. What will you pay for 2 lb. 4 oz. of cheese at 12 cents a pound?

6. How many minutes from 10 A. M. to 4 P. M.?

7. If it takes 2 men 6 days to dig a ditch, how long would it take 3 men to dig it?

8. What will 20 eggs cost at 12¢ a dozen?

9. How many times must I fill my cup which holds half a gill to fill my pitcher which holds a quart?

10. Mary had 24 words given her to spell. She spelled $\frac{2}{3}$ of them correctly. How many words were spelled wrong?

11. If a yard of cloth costs 40 cents, what will $2\frac{3}{4}$ yards cost? $3\frac{1}{8}$ yards?

12. If it takes $\frac{1}{4}$ of a yard of ribbon to make a bow, how many bows can be made from 2 yards of ribbon?

13. If it takes a man 3 hours to walk 10 miles, how many miles an hour does he walk?

14. If a man is 51 years old now, how old was he 23 years ago? How old will he be in 28 years?

15. If a bushel of berries costs 80 cents, what will four quarts cost?

16. How many sheets of paper in $2\frac{1}{2}$ quires?

1. How many pounds of sugar at 6¢ a pound can you buy with 3 dozen eggs at 20¢ a dozen?

2. A grocer paid his clerk $36 for 4 weeks' work. How much did he pay a day?

3. How many days in 72 h.? in 288 h.?

4. If a horse travels 81 miles in 9 h., how far will he travel in 6 h. at the same rate?

5. If $3 will pay for 39 combs, how many combs will $4 buy? $9? $8?

6. If a quantity of flour lasts 30 people 10 days, how many days will it last 25 people?

7. In the center of my dining-room, 20 ft. × 24 ft., is a mat 16 ft. × 14 ft. How many square feet of my dining-room is uncovered? (Draw a diagram.)

8. A butcher bought three calves; one weighed 53 pounds, one 47 pounds, and one 62 pounds. How much did they weigh together?

9. How many minutes in two hours and a quarter?

10. How much money in

a. Two 20-dollar bills, three 10's, four 5's, and seven 1's?

b. One 50-dollar bill, three 10's, six 5's, and three 2's?

c. Two 5-dollar bills, three 2's, one dime, two nickels, and two 3-cent pieces?

11. From one dollar a boy spent 3¢, 4¢, 5¢, 7¢, 9¢, 3¢, 5¢, 5¢, 7¢, 2¢, 7¢, 5¢, 8¢, and 3¢. How much money had he left?

12. Benjamin Franklin died in 1790, aged 84 years. In what year was he born?

1. A farmer bought a horse and two cows for $194. One cow cost $49, and the other $48. How much did he pay for the horse?

2. If you send $\frac{1}{4}$ of your birthday cake to sick friends, and eat $\frac{1}{2}$ of it at your party, how much of your cake have you left? Divide what you have left equally between yourself and your sister. What is your sister's share?

3. 20 lb. of sugar can be bought for a dollar. How many pounds can be bought for $4.50?

4. The American eagle is 38 in. from bill to tail. How many feet long is he?

5. Out of every dozen oranges 2 have spoiled. How many have spoiled out of 60 oranges?

6. I paid $90 for a horse, and then sold him so as to gain $15. For how much did I sell him?

7. How many square inches in the upper surface of your desk?

8. If 6 pairs of fur gloves cost $30, how many pairs of gloves can you get for $75?

9. What is the cost of 70 pecks of potatoes at 25¢ a peck? $3\frac{1}{2}$ bushels?

10. Which had you rather have, 10 gold dollars, or 5 silver dollars, 8 silver half-dollars, 3 quarters, and 2 nickels?

11. At 30¢ a gallon, what will $\frac{5}{6}$ of a gallon of oil cost? What will 6 quarts cost?

12. Bought 2 lb. 8 oz. of tea at $.60 per pound. What was the cost?

13. What will a mile of wire fencing cost at $1 a rod?

1. If it takes me ¼ of an hour to make one button-hole, how many can I make in 3 hours?

2. How many five-cent pieces can you get for $2?

3. A dealer sells oranges at 18¢, 20¢, 22¢, 30¢, according to size. What is the average price?

4. How many times can a pint measure be filled from a five-gallon can?

5. 3 sheets were used out of 2 quires of paper. How many sheets of paper remained?

6. What is the cost of 1 gal. 2 qt. of molasses at 60¢ a gallon?

7. How many square inches in the top of a table 2 feet square?

8. From a yard of cloth 9 inches were cut off. What part of a yard remained?

9. What will it cost to frame a picture 1 ft. × 2 ft. with moulding worth $.20 a foot?

10. How many yards in 60 ft.? in 90 ft.? in 120 ft.?

11. How many tons of hay at $5 a ton will pay for 20 yds. of carpeting at 50¢ per yd.?

12. At 50¢ per day, how much money can be earned during this month?

13. If a pea vine grows 2 in. a day, how many feet will it grow in 3 weeks.

14. If you feed a cow 3 qts. of meal a day, how many days will 6 pk. last? 3 bu.?

15. How old is a man who was born in 1837? One who was born in 1841?

16. How many years since Columbus discovered America in 1492?

1. What is the cost of 45 firkins of butter at $.28 per pound, 56 pounds to a firkin?

2. The ages of two boys are 9 and 12 years. What is the average age of both?

3. The ages of three boys are 9, 12, and 16 years. What is the average age of all?

4. A farmer raised one year 150 bu. of corn, and the next year 200 bu. What was the average number of bushels raised per year for the two years?

5. In 1840, 84,066 foreigners came into this country, and in 1841 the number that came was 80,289. What was the average number per year?

6. In 1890 the total number of immigrants was 455,302, and in 1891 the number was 560,319. What was the average number per year?

7. How many strokes does the hammer of a clock make from 1 o'clock A. M. to 1 o'clock P. M.

8. If 12 men can do a piece of work in 10 days, how long will it take 1 man to do it? How long will it take 8 men? How long 6 men?

9. How many tons of hay at $6 a ton will pay for 16 yards of cloth at $3 per yard?

10. If you can chop a pile of wood in your vacation of 60 days, how long will it take to do the work if 5 of your playmates help you?

11. How many ounce-packages of cinnamon can you make out of 3 lb.?

12. In 1889 the City of Paris crossed the Atlantic in 5 d. 19 h. 18 m. How many minutes less than 6 days is that?

1. How many hours do you go to school in the forenoon? How many minutes?

2. What will $\frac{1}{4}$ of a pound of powdered chalk cost at $.03 an ounce?

3. The pulse of a healthy child beats 78 times in a minute. How many times does it beat in 10 minutes?

4. A type-writer can write 90 words in a minute. How many words can he write in a second?

5. How many days in all the months which have *r* in their names?

6. A tub of butter weighed 40 lb. 11 oz. and the tub weighed 4 lb. 6 oz. How much did the butter weigh?

7. There are 196 lb. in a barrel of flour. How many pounds in $\frac{1}{2}$ of a barrel? in $\frac{1}{4}$ of a barrel? in $6\frac{1}{2}$ barrels?

8. At the rate of $.03 a pound, how much will 2 barrels of flour cost?

9. Every spider has 8 compound eyes. How many eyes have 21 spiders? 30 spiders?

10. If two pianos cost $600, what is the cost of one piano? of eighteen pianos?

11. I have 150 minerals, and I have named 80 minerals. How many minerals remain to be named?

12. Give answers at a glance:

$150 \div 75 =$	$39 \div 3 =$	$99 \div 33 =$	$100 \div 5 =$
$25 \times 8 =$	$72 \div 12 =$	$100 - 75 =$	$48 \div 3 =$
$16 \times 4 =$	$36 \div 2 =$	$500 \times 2 =$	$15 \times 3 =$

13. How many petals have 51 pansies?

14. What is the cost of 8 lb. of coffee at 25¢ a pound?

1. At 10¢ apiece, how many copy-books can I buy with 75 cents, and how much money shall I have remaining?

2. Bought a bicycle for $85, and sold it for $73. Did I gain or lose, and how much?

3. What is the price of 1 bu. of grass seed if 14 bu. cost $42.70? What will 1 pk. cost?

4. How many miles does a swallow fly in 5 h., if it flies 440 rd. per minute?

5. How many ounces do you weigh?

6. Two boys had 75¢ each. One spent $\frac{4}{5}$ of his money, and the other spent $\frac{3}{15}$ of his money. Which had the more money left, and how much?

7. How many pounds of beef can be bought for 16,884¢, at 9¢ a pound?

8. If 5 bu. of wheat are worth 1 barrel of flour, how many barrels of flour will a farmer receive for 4560 bu. of wheat?

9. In 90 years the population of the United States increased from 3,929,214 to 50,155,173. What was the average increase every year?

10. What is the cost of 16,000 ft. of lumber at $35 per thousand.

11. Rip Van Winkle slept 20 years on the mountain. How many hours did he sleep?

12. You ought to eat $3\frac{1}{2}$ pounds of dry food in a week. How many pounds of food ought you to eat in two years?

13. Suppose that Jack's bean-stalk grew — ft. in a second, how high was it in an hour?

1. $(8791 \times 86) \div (7 \times 8) = ?$

2. If 5 bu. of wheat is equal to 1 barrel of flour, how many barrels of flour are made in Minnesota out of 1,000,000 bu. of wheat?

3. What is the cost of 12 bu. of cranberries at 13¢ a quart? at 85¢ a peck?

4. If 15 yd. of ribbon cost $5.55, what will 87 yd. cost? $38\frac{1}{3}$ yd.?

5. My agent is paid 2¢ for every dollar's worth of goods that he sells. How much must I pay him for selling 300 dollars' worth? 1800 dollars' worth?

6. A turkey weighing 13 lb. at 22¢ per lb. is how much more expensive than 14 lb. of chicken at 19¢ per lb.?

7. How many days from Washington's birthday to the next Christmas?

8. One manufacturer sells a pair of shoes for $.875 and another for $.86. In buying 9876 pairs, what is gained by buying of the cheaper firm?

9. A squirrel often packs away — qt. of nuts. How many bushels of nuts are collected in a wood where there are 200 squirrels?

10. $3600 is to be distributed among 3 persons. The first is to receive $\frac{1}{6}$ of it, the second $\frac{1}{4}$ of it, and the third the remainder. How much will each one receive?

11. How many times has Thanksgiving been kept if the first one was observed in 1621?

12. Find the average weight of a class of boys if each weighs as follows: John, 85 lb.; Henry, 96 lb.; Ernest, 77 lb.; Monroe, 108 lb.; and William, 100 lb.

1. The slaves were declared free in 1865. How many years ago was that?

2. A wagon and load weigh — pounds. The wagon weighs — pounds. What is the weight of the load?

3. A family uses 7¢ worth of milk a day. What was the cost of the milk used during the last three months of the year? during the first three months?

4. A swallow flies 44 yd. in a second. How many yards can it fly in ¼ of a minute?

5. How many square yards in a lot of land 23 yd. long and 17 yd. wide?

6. Queen Victoria was born in May, 1819. How old was she in October, 1893?

7. What was the average temperature for the week if the mercury stood as follows: Sunday, 29°; Monday, 37°; Tuesday, 56°; Wednesday, 21°; Friday, 18°; and Saturday 22°?

8. I wish to make a gravel walk around my lawn, which is 100 ft. × 75 ft. The walk is to be 5 ft. wide. How many square feet of walk must be made?

9. Make out a bill of sale for the following: James Boody bought of Clarkson & Co. 84 yd. flannel at $.16 per yd., 72 yd. sheeting at 12¢ per yd., 96 yd. cassimere at $.75 per yd., and 64 yd. velvet at $1.25 per yd.

10. In 1889 there were 212,302 children attending the public schools in New York, 171,467 in Philadelphia, and 68,798 in Boston. How many children in the schools in these three large cities?

11. If there was one teacher to every 45 pupils, how many teachers in each city? in all three cities?

1. How many yards in 168,423 in.?

2. From $1\frac{1}{2}$ tons of coal I burned 500 lb. How many pounds remained?

3. From what number must 309 be subtracted five times to leave 173?

4. How many more days in the last six months of the year than in the first six months?

5. How many pints in a barrel containing 30 gallons?

6. A pipe pours into a reservoir daily 13,440 gallons of water. How many gallons flow into it in an hour? How many in a minute?

7. It takes a steamer 12 days to make a trip from New York to Germany, a distance of 3,400 miles. How many miles does she make a day?

8. How many quires of paper in 210,436 sheets of paper?

9. How many pecks of beans in 100,000 quarts?

10. How many times can a 2-quart pail be filled from a cask containing 150 gallons?

11. What are a milkman's profits for the week if he sells 339 qt. of milk daily for 5¢ per qt., which he buys for 3¢ per qt.?

12. I have 4 bins containing 75 bu., 48 bu., 90 bu., and 35 bu. of corn. If there are 60 pounds of corn to a bushel, how many pounds of corn will they all hold?

13. What is the height of an iceberg which is 612 in. above the water and 8 times as many in. below the water?

14. How much does it cost a year to heat a schoolhouse, if there are 87 tons of coal burned, worth $7.25 a ton?

10	cents (¢)	=	1 dime (d.)
10	dimes	=	1 dollar ($)
4	gills (gi.)	=	1 pint (pt.)
2	pints	=	1 quart (qt.)
4	quarts	=	1 gallon (gal.)
2	pints	=	1 quart.
8	quarts	=	1 peck (pk.)
4	pecks	=	1 bushel (bu.)
16	ounces (oz.)	=	1 pound (lb.)
2000	pounds or	=	1 ton (T.)
20	hundredweight (cwt.)	=	1 ton (T.)
12	inches (in.)	=	1 foot (ft.)
3	feet	=	1 yard (yd.)
5½	yards	=	1 rod (rd.)
320	rods	=	1 mile (mi.)
60	seconds (sec.)	=	1 minute (min.)
60	minutes	=	1 hour (h.)
24	hours	=	1 day (da.)
7	days	=	1 week (wk.)
12	months (mo.)	=	1 year (yr.)
12	things	=	1 dozen (doz.)
20	things	=	1 score.
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20	quires	=	1 ream.

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